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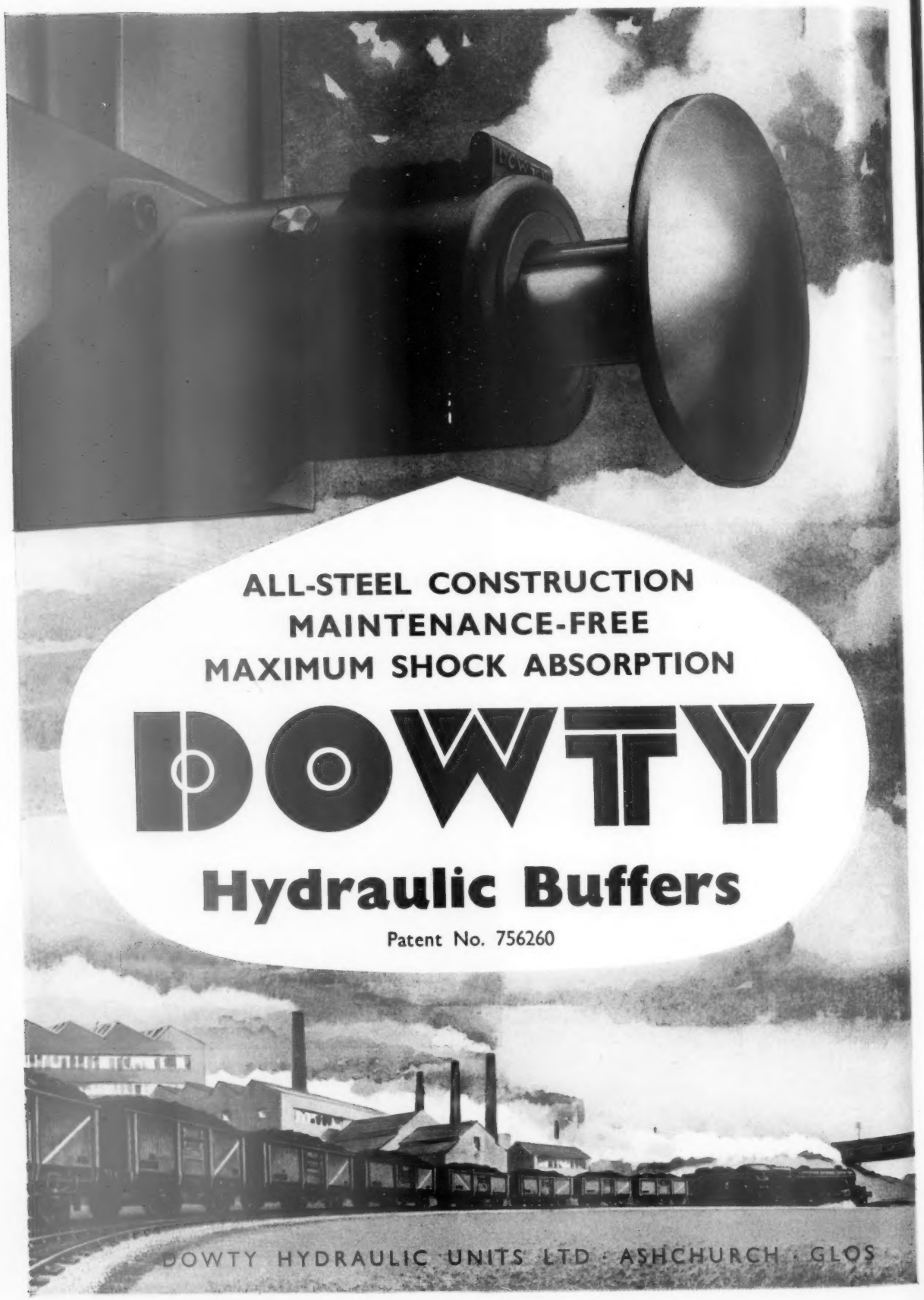
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Progress in Staff Relations

THERE has been some difficulty in reaching agreement between the British Transport Commission and the Associated Society of Locomotive Engineers & Firemen on the question of redundancy brought about by developments under the modernisation plan for British Railways. The main difficulty seems to have been that locomotive staff were not prepared to undertake other types of work, even if motive power department requirements in their home district were small. Although no details had been announced as we went to press, it is understood that an agreement has now been reached corresponding broadly to that applying to other grades of staff, which provides that surplus staff, as far as possible, will be found other work in their present districts. Those who are allocated to work carrying a lower rate of pay are allowed in general to retain their original rate of pay for three years. Whether the agreement on locomotive staff includes "cross-posting" to other departments is not yet known, but this would be a point which the A.S.L.E.F. would obviously be reluctant to concede because it would take its members into spheres of work not covered by that union. Every transferred man would be in effect a member lost to the A.S.L.E.F. The National Union of Railwaymen, which has locomotive staff among its members, would not suffer the same loss of membership by transfer, for it caters for all grades of railwaymen and would be able to represent the member equally well in his new grade. The N.U.R., therefore, is not likely to have as strong an objection as the A.S.L.E.F. to the transfer procedure. The A.S.L.E.F. has an additional incentive to retain as many men as possible in the locomotive grades—the fact that no agreement has yet been reached on the question of manning diesel and electric locomotives. It is understood that a series of "domestic" meetings has been held between the Commission, the N.U.R., and the A.S.L.E.F. to discuss the question and that a working party is being formed to examine the matter in detail. The Commission holds the view that, as with diesel and electric multiple-unit trains, it is necessary to have one man only in charge of a diesel or electric locomotive. The trade union view is that two men should be in the cab of all main-line locomotives.

Achievement in East Africa

BEFORE returning to England on pre-retirement leave, Sir Arthur Kirby, General Manager, East African Railways & Harbours, told the Associated Chamber of Commerce & Industry of Eastern Africa something of the progress made in the development of the railways and harbours since his return to East Africa in 1948. Referring to major matters of policy which he dealt with during his term of office he stated that he had had to advise against accepting recommendations for the North/South Link Railway. It would not be worthwhile, with the limited capital funds available, to allocate money to the North/South Link at the expense of much needed development in East Africa itself. Since the end of the war ton-mileage had increased by 100 per cent to 1,700 million, most of which had to be handled with inadequate equipment because new locomotives and rolling stock did not become available in quantity until 1954-55. Referring to transport capacity, Sir Arthur Kirby stated that by improvements in operating techniques, by the speeding up of train schedules, and by better yard facilities, the E.A.R.&H. is now in the position of having a margin of surplus capacity.

Uneconomic Lines in Brazil

THE expansion of the Brazilian economy, which in general holds out a bright future for the railways, does not alter the fact that considerable mileages of line offer little prospect of profitable operation, or even of paying their way. The commission appointed to recommend lines to be abandoned under President Kubitscheck's reform programme, has suggested closure of more than 1,000 miles, including some 200 miles each of the Paulista, Leopoldina, and Central of Brazil, 130 miles of the Rede Mineira, and 75 miles each of the Sorocabana, Mogiana, and Nordeste, and 65 miles of the Noroeste systems. The recommendations are meeting with considerable political opposition. Congress has approved a law incorporating two condemned lines of the Central of Brazil, namely, the Teresopolis and Marica Railways, respectively 25 and 100 miles long, in the Leopoldina system; both operate at a loss, are in bad condition as regards permanent way, motive power, and rolling stock and are isolated from the Central Railway but connect with the Leopoldina. The policy of the Federal Government appears to be one of capital development of the railways, but with acceptance of certain deficits where these are deemed inevitable.

Malayan Railway Rehabilitation

THE progressive administration of the Malayan Railway had to face a critical situation in 1945 at the end of four years' Japanese occupation. The rolling stock and other equipment had been worked to maximum capacity without proper repair or renewal and the permanent way had been neglected. The 330-mile East Coast section and branch lines had been pulled up and exported, 10,000 ft. of bridging had to be replaced and 114 coaches had dis-

appeared; those remaining had been gutted. The main workshops at Sentul, 300,000 sq. ft. of warehouses, staff quarters and other buildings had been destroyed wholesale by bombing. However, rehabilitation began forthwith, the greatest undertaking being the restoration of the East Coast line, described in detail in our issue of October 15, 1954. The Connaught Bridge was also rebuilt, and rolling stock, workshops, stations, and track were restored as quickly as possible. The cost of all this reconstruction and rehabilitation had reached $103,500,000 by the end of 1955, and services were gradually improving until the "Emergency," caused by terrorist warfare, produced a second setback, reducing the earning capacity of the railway by 25 per cent.

Progress in Modernisation

DESPITE this handicap, the rehabilitation of the Malayan Railway was completed by the end of 1956, but a new menace still had to be faced in the shape of keen competition from other forms of transport, urgently demanding improved services and greater efficiency. One of the earliest steps taken was to order 20 main-line diesel locomotives, and the first two were delivered recently. These units, described in our April 5 issue, are being used initially on the Singapore-Kuala Lumpur-Prai mail trains, permitting a cut of an hour in journey-time between the first two cities. Six diesel-electric railcars are also on order from Australia for use with trailers on branch and interurban services. Moreover, construction is in hand upon new carriage and wagon shops at Sentul. Signalling is also being radically improved. At all stations between Singapore and Kuala Lumpur where this was not possible, part-interlocking has already been installed to enable trains to run through without restriction of speed. The introduction of C.T.C. is imminent, and tenders have been invited for the necessary equipment.

Outlook for Steel

AT the beginning of the year it was estimated that, given favourable circumstances, steel-making capacity should be available in 1957 to give an output of 22,400,000 tons. This figure, it now seems, is likely to be closely approached if not attained, auguring well for supplies for the railway modernisation programme. Production for the first half of the year was 11,140,000 tons compared with 10,600,000 tons for the first six months of 1956. Output in the second half of the year is affected by holidays, but this may be offset by the increased capacity due to come into use in the autumn. Pig-iron production has also been rising, improving from 6,600,000 tons in the first half of 1956 to 7,100,000 for the corresponding period this year. The Iron & Steel Board reports that the greater availability of some products, particularly tinplate and light sections, has led to a marked change in the balance of trade in steel. The excess value of exports over imports is now more than sufficient to provide for the import cost of raw materials for steel manufacture. Most of the imported materials are used for steel for the home market.

Tubular Construction Diesel Railcars

THE Gloucester Railway Carriage & Wagon Co. Ltd., in collaboration with the Transport Sales Development Department of T.I. (Group Services) Limited, has designed and built for the British Transport Commission a new type of lightweight diesel railcar of tubular steel integral construction. A number of these vehicles, part of an order for 80 under the railway modernisation programme, was on view at the Gloucester works last Friday, when visitors, who included representatives of home and overseas railways, were able to see both motor and trailer coaches in all stages of construction to the finished product. The tubular construction was decided on because of the need to effect saving in weight, secure strength by an integral structure and at the same time overcome the problems imposed by the British Railways loading gauge with its constriction at platform level and maximum width at seat level. The result has been a vehicle which has successfully passed stringent loading and strain measurement tests. A brief description of the coaches is given elsewhere in this issue.

Attracting Passenger Traffic

SOME of the steps taken by British Railways to attract more passenger traffic by offering increased comfort and modern décor in their vehicles were exemplified in the prototype coaches which were among the exhibits at the British Transport Commission Modern Travel Exhibition held recently at Battersea. The rolling stock on show included examples of designs by both British Railways and private contractors. The six coaches of British Railways design which were built in the Doncaster Carriage Works, are described in greater detail elsewhere in this issue. Although it is not possible to incorporate all the many innovations, new materials, and colour schemes in future standard coach construction, these prototypes will be run in ordinary service conditions to determine the reaction of the travelling public.

Industry and Sport

MANY prominent British industrial undertakings are keen supporters of sport in one or more of its varied forms. Sir John Pascoe, Chairman & Managing Director of British Timken Limited, has long been an ardent advocate of greater support by industry, and he explained some of his reasons at a luncheon at which Mr. K. S. Duncan, General Secretary of the British Olympic Association, was the principal guest on July 17. The prestige attaching to international eminence in sporting events has a direct bearing, in Sir John Pascoe's view, on the general esteem in which British products are held; success in sporting events is a valuable form of publicity for Britain. British Timken is not only the largest manufacturers of tapered roller bearings in Europe, but it gives practical support to its Chairman's policy by the facilities it affords its employees to indulge in sporting events. The British Timken Show, which will take place on August 30 and 31, has been marked, not only by the excellence of the products exhibited, but also by the people famous for their skill in the showring who compete at it. No other industrial organisation in the country holds a show on so large or comprehensive a scale, and the efficiency with which it is run reflects the skill and organisation of the company responsible for it.

Rubber on Railway Tracks

APPLICATIONS of rubber to tracks received the greatest attention last year, as regards railways, from the Natural Rubber Development Board in this country. The 1956 report of that body refers to co-operation between the British Transport Commission and the British Rubber Producers' Research Association. Rubber pads for level crossings were the subject of particular interest; technical advice was furnished to British Railways, and progress is stated to have reached a stage where the Commission asked for quotations. The field is wide, as there are still over 25,000 level crossings in Britain alone. Many thousands of rail pads were installed in the Quay Railway, Sydney, by the New South Wales Railways, which, despite initial difficulties, are continuing trials in the belief that the pads supply the answer to many problems. The Queensland Railways are investigating their use in connection with difficulties experienced with varying sizes of steel rails. The South Australian Railways also have been carrying out experimental work. In each case the Development Board has rendered assistance.

Double Current Working at Luxembourg

ELECTRIFICATION of the international north-south route through the Grand Duchy of Luxembourg brings together in Luxembourg Station two sections of the Luxembourg Railways operating on different voltages.

The line northwards is on 3,000 V. d.c., and connects with the Belgian National Railways' main line electrified on that voltage; similarly the line south, which links up with the French National Railways, works on 25 kV. a.c., 50 cycles. At Luxembourg, to avoid coasting, and shunting of dead electric locomotives by steam or diesel power, certain platform lines have been equipped for one system and some for the other. One line, divided into two sections, can be fed from either traction supply under suitable signalling and interlocking arrangements, combined with short dead-end locomotive sidings and track circuit and contact wire switching controls, which make it impossible, even if a driver moves against signals, for a 3,000-V. locomotive to run under wires energised at 25 kV. Special signals, supplementing the ordinary ones, are used in connection with these arrangements, which are either worked from, or under electrical releases given by, the traffic supervisor, who directs the entire working of the station from a desk type " panel " apparatus. The signal and point working of the layout concerned is on the all-electric system.

Jubilee of Austrian Electric Railway

ON May 1, 1907, the electric interurban railway between Vienna and Baden, a holiday resort about 19 miles from the capital, was opened and offered the peculiarity, of particular interest at the time, of being operated at 550 V. d.c. on the city sections at both ends and on 750 V. single-phase, 25 cycle current, outside those limits, where the line had its own separate track and a fairly high rate of speed was maintained. The undertaking had originated out of a combination of steam and electric tramway working, preceded on certain portions of the route by horse tram services dating back to 1873. A steam tram had begun to run in 1886 between Vienna and Wiener-Neudorf, to serve industrial establishments, and an electric one between Baden and Guntramsdorf, to which the former became extended, started operating in 1899. The re-equipped through line was provided with very good rolling stock and soon was conveying a large traffic, especially when war conditions came to restrict facilities on the ordinary railways nearby. A notable feature was a light refreshment service in one car in each train. In the last war the line suffered very considerable damage but this has been made good and the entire working changed to the d.c. system. At its opening the Vienna-Baden Railway was exceptional in adopting right-hand running on its own right of way, although left-hand working was then the rule for both street and railway traffic in the old Austria.

Failure of an A.T.C. Siren Warning

COLONEL W. P. REED'S report on the Ludlow collision of September 6, 1956, summarised in this issue, shows it to have been due to overrunning a distant and two stop signals at speed. It was very fortunate that casualties were so light. The engine was fitted with the Western Region A.T.C., which was found to be in proper order—as was the whole of the signalling equipment at the station—except that a thread of cotton waste, drawn into the cab apparatus, was preventing the siren mechanism from revolving. This had no effect, however, on the automatic brake action, which the driver must have cancelled without realising what he was doing. Accustomed to a clear run at this place he was, it seems, not paying proper attention to things and was taken by surprise on seeing the second of the stop signals. The train he overtook had been stopped out of course, as a result of a collision between a lorry and level crossing gates, necessitating single line working, but the acceptance of his own train was in order. There was sufficient overlap and no breach of block working was committed. The Western Region is fitting covers to prevent foreign matter from being drawn into the engine units, a risk common, of course, to all vacuum operated apparatus. Of the 3,000 engines with this type of A.T.C. apparatus, about one-third have now been fitted with the covers.

Problems of Dining Car Economics

THE cost of providing dining-car facilities in trains in the U.S.A., in common with many other countries, has reached a point where a number of important railways, including the Pennsylvania and the New York Central, are insisting that they cannot afford to sustain such losses in the future. An article by Mr. Robert E. Bedingfield in a recent issue of *The New York Times*, which has been sent to us by a correspondent, traces the history of the dining-car in the U.S.A. from the *Delmonico* car built by George M. Pullman in 1868 to the present day.

A Pennsylvania menu of 1883 shows a list of fare starting with oysters, soup, and salmon, offering a choice of 12 different meat and poultry dishes and six vegetables, and continuing with eight assorted sweets, fruit, cheese and biscuits, and coffee. All this, including such exotic dishes as salmi of quail with truffles, was offered for one dollar. A current New York Central menu shows that a meal of which the main dish is grilled lamb chops with spiced crabapples, peas, and potatoes will cost $6.25. The same menu shows " genuine English Channel Sole Saute, Amandine " at $5.50. The article suggests that similar meals in an average restaurant would cost only $4, and that the average traveller therefore takes his meals before he boards a train and makes little or no use of the dining-car facilities.

The U.S.A. railways, as the newspaper article points out, are competing with themselves. A group of six railways, owning together 389 dining cars, declares that the maintenance and movement of the cars alone costs some $24,000,000 a year, but the railways are providing club, lounge, " chuck wagon," and other cars in which refreshments are served. Although the food available is only light, these cars are competing, in effect, with the dining-cars serving full meals. Various measures have been taken to reduce the cost of service. The Union Pacific Railroad, for example, has tried offering a buffet from which the passenger can help himself, and the New York Central, on certain short-distance trips, offers pre-cooked tray meals at rather less than $2 each. Even so, in 1955 the New York Central spent $12,555,295 on operating and maintaining its dining-cars, and $10,231,983 on serving meals. The return from passengers was only $8,602,435.

On some trains the loss is even greater than might appear from these figures. In an examination of service costs for one month on the " Twentieth Century Limited " of the New York Central, it was shown that 11,044 meals were served at an average cost to passengers of $3.83. This gave total receipts of $42,252, but the food and its service cost $50,232. When to this is added $60,000 for service and maintenance of the dining-cars, there is a loss on these catering services amounting to $6.14 per head per meal.

No concept of dining-cars as a passenger amenity to attract custom can include losses on this scale, and the contention that such services influence freight traffic is disputed by some railway companies in the U.S.A., which declare that purchasing agents and sales managers may go for years without entering any but suburban trains. Nevertheless, the New York, New Haven & Hartford Railroad has rationalised its dining-car services so effectively that the loss on each meal served is small, and no doubt much can be done once the tradition of " high-living " in dining-cars is set aside. British Railways have done much, with cafeteria cars, combined dining-buffet cars, and so on, to find a solution for the problem of providing meals at popular prices and also catering for the minority which requires full service. Whatever form meal services may take in the future, it is unlikely that the meals offered, or the excellence of the *cuisine*, on railway trains will ever become a selling-point again, although the tradition lingers in air transport. The days when the Northern Pacific Railway declared itself to be the " Road of the Great Big Baked Potato " seem to have gone for ever.

East African Railways & Harbours

THE report of Sir Arthur Kirby, General Manager, East African Railways & Harbours, for 1956 has again been produced in a form intended to attract the general public, having proved eminently satisfactory last year. Like a growing number of official railway reports, it is well produced, with well-chosen photographs illustrating notable developments during the period covered.

The year 1956 started very promisingly with imports still increasing in volume, export tonnages high, and internal traffic good. By the end of April, revenue from all services was about 13 per cent higher than in 1955, but this increase was not maintained. The total public traffic moving over the railways was slightly less than in the previous year, and cargo passing through the ports failed to increase.

The combined revenue for the year was £21,646,000, only £191,000 more than in 1955. Railway revenue was down by £253,000, the fall in traffic being particularly pronounced in high-rated import traffic. After allowing for current renewals, the net earnings of £2,592,000 were taken up in the payment of capital overheads, which amounted to £2,594,000, some £570,000 more than in 1955. Net earnings were 12 per cent of the total revenue expenditure of £92,000,000, however £33,500,000 of this is free of interest and the overheads averaged 4·44 per cent on interest-bearing capital.

The net expenditure on new equipment, new works, and renewals of existing assets during the year was £8,250,000, a decrease of £9,250,000 on 1955. Of this sum £1,250,000 was a charge against the renewals funds for the replacement of outworn equipment. The new capital expenditure of £7,000,000 was financed to the extent of £1,000,000 from betterment funds and £6,000,000 by long-term loans, or short-term borrowings. The expenditure on new capital works was lower than in immediately previous years as the result of the completion of many development schemes and the fulfilment of most of the rolling stock orders in 1955.

During the year a further £3,500,000 loan was raised on the London market, the rate of interest being 5½ per cent and the issue price £98 10s., which was much costlier than any loan obtained since 1930. £21,750,000 of the existing loan programme has still to be raised on a long-term basis.

Below are compared some of the principal results with those of the preceding year:—

	1955	1956
	(*thousands*)	
Railways, steamers, and motor transport—		
Total train-mileage	9,218	9,701
Passenger journeys	5,585	5,828
Goods tonnage	3,913	3,881
	(£ *thousands*)	
Coaching receipts	2,006	1,964
Goods receipts	13,800	13,466
Total receipts	17,532	17,279
Working expenses	12,914	13,649
Harbours—		
Receipts	3,924	4,367
Expenditure	3,249	3,547

Most remaining locomotives on order were delivered during the year. The last four Beyer-Peacock "59" class were put into service, making 34 of this class on the Kenya-Uganda Section. Other deliveries included 19 "31" class manufactured by Vulcan Foundry Limited; total now in service 46, and 12 North British Locomotive Co. Ltd. "30" class, making the total in service on the Central Line 26. In all, 44 new locomotives, 40 coaching vehicles and 586 new wagons were placed in service. These, together with the large additions in 1955, provided more than adequate capacity, and traffic moved more freely than in previous years. There was an excess of power generally although at times there was difficulty in providing sufficient light axle-load locomotives for the Mwanza and Mpanda lines. With this exception, power should be able to meet requirements for a few years, provided there are no unforeseen traffic increases. The stock of wagons should also be adequate for the next two or three years, but there is still a shortage of passenger coaches in spite of the delivery of 12 second class and 11 third class, and the release of 11 third class coaches from emergency use in Kenya.

Included in locomotive deliveries were six "83" class and three "84" class diesel locomotives, equipped with Paxman engines, and manufactured by North British Locomotive Co. Ltd. Of these, three "83" class diesels were sent to the Southern Province Line as a further step to the changeover of this railway to diesel traction. The number of diesels in the Southern Province is now 10 out of a total of 12 locomotives operating. In addition, at the end of the year, one diesel railcar, formerly in use on the Butere branch, was transferred to the Southern Province after overhaul. Two further railcars and one locomotive are to be transferred in 1957.

Progress in Victoria

THE Chairman of the Commissioners of the Victorian Railways, Mr. E. Brownbill, has given an account of recent developments on his system in a letter to a correspondent to whom, and to Mr. Brownbill, we are indebted for permission to refer to the content of the letter.

Considerable progress, Mr. Brownbill states, has been made with the motive power renewal programme. The Victorian Railways now have 26 "B" class main-line diesel-electric locomotives (1,750 h.p.) and 27 "T" class utility diesel-electric locomotives (900 h.p.) used on passenger and goods work, and 13 diesel-electric for shunting in yards. The first of an additional order for 10 main-line diesel-electrics is expected to arrive in August. In addition, 25 electric locomotives (2,400 h.p.) are available for service on the Gippsland line. Beyond Traralgon to Sale, Bairnsdale, and Orbost the "T" class utility diesel-electric locomotives have taken over the complete train service, and steam locomotives have almost completely disappeared from the Eastern Gippsland district. There are, however, still 450 steam locomotives on the system, including modern ones such as the "J," "N," and "R" classes which have many years of valuable service ahead, and it will be a long time before the Victorian Railways are made over completely to diesel traction.

As regard conversion to 4 ft. 8½ in. gauge of the Albury to Melbourne line, tenders have been let for an aerial and ground survey, the cost of which is to be shared equally between the Federal Government and the State Government of Victoria. The first stage of the expansion work at Richmond is expected to be brought into use next year; it will be the new up and down Sandringham tracks between South Yarra and Flinders Street. This work, when completed, will add considerably to the capacity of the Caulfield and Box Hill groups of suburban lines. The project includes complete re-building of Richmond Station with five island platforms, reconstruction of the bridges carrying the tracks over two streets, and additional tracks through to Flinders Street, and present indications are that it will be possibly three years before the whole of the new facilities will be in use.

Works involving elimination of level crossings, Mr. Brownbill states, has been made possible by the setting up of a Level Crossings Abolition Fund which is fed from motor vehicle transfer fees; the present arrangement is that the cost is shared by the Fund (50 per cent), the road authority (25 per cent) and the railways (25 per cent). Good progress is being made with the provision of additional terminal facilities at Dynon Road, South Kensington, where traffic is now being handled from and to New South Wales and the North Eastern lines, so obviating the necessity for such traffic to go through the Melbourne Yard. Duplication of the Camberwell-Ashburton line is also well advanced, as is that of the line between Heyington and Eastmalvern.

The State of Victoria has been granted a greater allotment of money by the Loan Council this year, and the Railways Commissioners hope that the railways will be given at least the same allocation as last year, so enabling their large works programme to be implemented without delay. Despite intense road competition, which has

compelled the Commissioners to cut rates to the bone in many cases to combat it, revenue has steadily risen for some time past, with the result that the undertaking is now about £500,000 above last year's figures. Victoria, however, has been facing a possible drought after an extremely dry summer and autumn, and without good rains throughout the country soon, this will undoubtedly have a detrimental effect on railway revenue later on.

The Indian Railway Inspectorate in 1955-56

THE total route-mileage of railway under the Indian Railway Inspectorate on March 31, 1956, was 34,739, including the two small privately-owned 2 ft. 6 in. gauge lines in West Bengal, the Baraset-Basirhat Light Railway and the Bengal Provincial Railway, which, however, ceased working on July 1, 1955, and March 20, 1956, respectively. Of that mileage 97·6 per cent were Government-owned and 2·4 per cent companies' and district boards' lines and lines in foreign territory. The two 2 ft. 6 in. gauge lines mentioned above, 52 and 42 miles in length, represent all but one of the 95 route-miles of line in India closed during the year. On the other hand, 7·48 miles of new metre-gauge line were opened, and 87·15 miles of 5 ft. 6 in. gauge, dismantled during the war, were reopened for traffic, 79·22 of these route-miles being the Northern Railway Sultanpur-Utraitia section. Three lengths of existing single line, totalling 19·55 miles and all of 5 ft. 6 in. gauge, were doubled during the year. 25·12 miles of 2 ft. 6 in. gauge were converted to metre gauge, and the 7·99 miles of the Western Railway between Andheri and Borioli on the main 5 ft. 6 in. gauge in the Bombay suburban area were electrified.

On the recommendations of the various Government Inspectors, the Railway Board sanctioned the running of the following new types of locomotive and rolling stock—or types that were new to the particular sections of line for which they were approved—during 1955-56:—

Locomotives

(1) Dual-purpose Co-Co type electric locomotive, on 5 ft. 6 in. gauge Central Railway.

(2) W.L. type (steam), on Southern Railway 5 ft. 6 in. gauge lines.

(3) Y.L. 2-6-2 type (steam), on Western Railway metre-gauge sections.

(4) W.L. type (steam), on Northern Railway 5 ft. 6 in. gauge sections.

(5) BB type diesel-hydraulic, on the metre-gauge Palanpur-Gandhidham section, Western Railway.

Rolling Stock

(1) Schlieren type third class coach, on Southern Railway 5 ft. 6 in. gauge sections.

(2) Diesel 210-h.p. single-engine, on Northern Railway metre gauge.

(3) Jeep motorcar with trailer, on Southern Railway metre gauge.

Government Inspectors enquired into 10 train accidents during the year under review, as against 16 in the previous year. Of these, four were collisions, five were derailments, and one was a collision between a train and a road vehicle at a manned level crossing. The level-crossing accident was caused by failure by the crossing-keeper to obey rules. Date: May 7, 1955. Four passengers in the road vehicle were killed and seven injured, and seven passengers in the train were injured, two grievously. On August 5, 1955, a South Eastern 5 ft. 6 in. gauge passenger train was derailed on straight track at 35-40 m.p.h. Two wagons and two vans next the tender fell down the embankment and the first two of eight bogie coaches capsized and were telescoped; there were three passengers killed and 28 injured. The causes were defects in the leading van and in the track.

On January 6, 1956, a passenger train was diverted on to the wrong line at Katihar Junction points in the early morning and some fog, and travelled for 4½ miles on that line before meeting a goods train head-on on straight level track. Both trains were travelling with the correct line-clear authority, and the primary fault was with the Assistant Stationmaster for failing to see that the points were correctly set; he absconded after the accident. But the driver of the passenger train was also held partly responsible for not realising that he was on the wrong route for so long, as the fog was only light. Eleven passengers were killed and 19 injured, 8 seriously. The Bombay-Calcutta mail was derailed by the deliberate unfishing of the joints and slight slewing of the rails at 4 a.m. on January 24, 1956, on straight track in open country 314 miles from Bombay. The locomotive and 10 leading coaches were derailed, but only one postal sorter was killed and 18 passengers were injured. The cause was sabotage. The other accidents enquired into were less serious.

Australian Gauge Standardisation

PLANS for gauge standardisation throughout the Australian mainland have failed in the past because they were too ambitious. Consequently, a committee of members of the Commonwealth Government was set up in March, 1956, under the chairmanship of Mr. W. C. Wentworth to frame a limited scheme for standardising certain of the main trunk lines as a Dominion-wide skeleton 4 ft. 8½ in. gauge system. The committee's report was issued in October, 1956, and recommended the conversion to that gauge of the three sections of line, namely: (1) Wodonga (Albury)-Melbourne, (2) Broken Hill-Port Pirie-Adelaide, and (3) Kalgoorlie-Fremantle. Completion of these conversions will establish a comprehensive system of 4 ft. 8½ in. gauge connecting Fremantle-Perth-Kalgoorlie-Port Pirie-Adelaide-Broken Hill-Sydney-Melbourne-Brisbane, which, incidentally, will link together all five mainland state capitals.

The estimated costs of these three conversions are (1) £10,000,000, (2) £13,500,000, and (3) £18,000,000, respectively, or £41,500,000 in all. In the view of the committee, the saving in road construction costs would outweigh this expenditure many times and the scheme would provide the cheapest and most efficient interstate transport system, save the roads—which would otherwise be pounded to pieces by increasingly-heavy freight vehicles—and minimise capital outlay. In order to spread the cost of conversion over a number of years, it is recommended that a sum of £3,000,000 or £4,000,000 be allocated for the work in the first year, and that if this rises to £6,000,000 in later years, the whole project could be completed in about 7½ years at most. Conversion No. 1 or No. 2 should be undertaken first and completed so that one project can be paying its way before a second is begun; the Kalgoorlie-Fremantle Conversion (3) will not do this until conversion (2) from Port Pirie is completed and so should be the last to be undertaken.

Other points made in the report are that the scheme it proposes provides uniform gauge right across the Continent from west to east and from Brisbane to Melbourne, and has great economic and defence value. Existing breaks of gauge enable road transport to compete favourably with the railways, with resulting destruction of the highways by constant increase in volume and unit-weight of road vehicles. Great expenditure would be needed to repair the damage caused by ever-increasing road traffic, and to finance the road expansion necessary to keep pace with that increase and the national economy generally. Main freight traffic between State capitals and over other long distances can be carried by rail much more economically from the national point of view. Rail as opposed to road transport also saves about 75 per cent of oil imports, not to mention rubber and vehicles, and is much more economical in manpower. Moreover, the project would assist the railways of the States towards solvency, and provide better and cheaper service, reducing transport costs vital to the economy.

The mileage of conversion involved in the scheme is about 750. The 2,000,000 additional sleepers required can

be provided from local sources; the sleeper-production industry is at present working below capacity. Of the 120,000 tons of new rails that would have to be laid, some might have to be imported at first, though the whole quantity could be supplied locally. Rolling stock is also produced in the Commonwealth and a certain number of diesel-electric locomotives also. Finally, the committee expresses the belief that its recommendations will increase the efficiency of the entire Australian transport system, reduce costs throughout the whole economy, and benefit interstate transport. The report also urges immediate action to standardise the trunk lines so essential to overall transport efficiency in the future of a great country.

U.S.A. Railway Operations in 1956

(By a Correspondent)

WITH unfailing punctuality the Association of American Railroads publishes in the month of April a comprehensive review of railway developments in the United States during the previous year. The survey of 1956 railway operations prepared by Mr. J. Elmer Monroe, Director of the Association Bureau of Railway Economics, is of special interest because economic activity in the States last year was at an all-time peak, with industrial production about 3 per cent above the 1955 level. Yet Mr. Monroe shows that "the railroad picture remained overcast in many respects." Increases in freight rates and passenger fares did not keep pace with mounting costs of labour and materials, so that in a time of general prosperity the rate of return on net railway property investment fell below 4 per cent, as it did in the lean year 1954.

Mr. Monroe calls 1956 a good traffic year, but the five-week steel strike started on July 1 spoiled the railways' chance of setting up a fresh peacetime record for revenue ton-miles. They recorded 646,976 million, slightly above the busy year 1951, but 1·2 per cent below 1947. Revenue passenger-miles shrank to 28,190 million, a loss of 1·2 per cent from 1955, 18 per cent from 1951 and no less than 38 per cent from 1947. Expressed in traffic units (revenue ton-miles plus twice the number of revenue passenger-miles) the total 1956 movement of 703,356 million was 2·3 per cent below 1948, the critical year when the spread of diesel motive power began. The railways, however, employed 1,042,664 people in 1956, a reduction of 284,240 from the 1948 number of staff or 21 per cent. Traffic units per head were thus 24 per cent higher last year than in 1948.

Economies in manpower are of primary importance in present-day conditions. The average earnings of employees in 1956 were $5,107, having advanced by about $1,000 in each successive five-year period since 1941. Including payroll taxes and fringe benefits, not covered by earnings, total wages costs last year exceeded all previous records. At the close of the year contracts with labour unions providing for three-year term agreements had been signed and cover about 81 per cent of all employees.

Financial Results

Total operating revenues in 1956 amounted to $10,551 million, an advance of $445 million, or 4·4 per cent, on 1955. Owing in part to rate increases in March, freight revenue of $8,951 million accounted for 85 per cent of total revenues and 93 per cent of the overall increase. Passenger revenue of $757 million was up about $14 million on 1955, mainly through a 5 per cent increase in ordinary passenger fares in May. Mail revenue of $287 million was virtually the same as in 1955, but $20 million less than in 1954. Revenue from "express" or parcels service, amounting to $119, was slightly higher than in the two previous years.

Operating expenses totalled $8,108 million, a rise of $462 million, or 6 per cent, on 1955, which wiped out the addition to revenues and raised the operating ratio from 75·6 to 76·8 per cent. Transportation expenses were 7·2 per cent higher. Maintenance of way and structures cost 1·3 per cent more and $105 million, or 5·9 per cent extra, was spent on the upkeep of equipment. Mr. Monroe regards these increases as moderate, because works programmes were curtailed in 1954 and 1955, while unit costs rose last year. The final result of all these changes was a net income after charges of $874 million, a fall of $53 million from 1955. This drop in earnings was unfortunate at a time when the railways need large amounts of capital to improve their plant and services.

Progress in Efficiency

Mr. Monroe tabulates ample statistics to prove that greater efficiency of operation has helped the railways to combat soaring costs of working freight traffic. The net wagon load last year was 33 tons, 5 per cent higher than it was 10 years earlier. The average wagon covered 48·3 miles a day against 45·2 in 1946, an improvement of 7 per cent. Again, in 1956 each serviceable wagon moved on an average 1,023 net ton-miles per day against 1,000 in 1955, the best result in any year since 1951. Last year's train load of 1,420 short tons was nearly 31 per cent heavier than the 1946 load. The average speed of this heavier train was 18·7 miles an hour, 16·3 per cent faster than the speed of 16 miles an hour reached 10 years ago. At that time the daily mileage of active freight locomotives was 115·9; last year's figure was 149·1, an advance of 28 per cent.

All these factors lead up to the output of freight train operation, measured by gross or net ton-miles worked in a train hour. Mr. Monroe gives a diagram of freight train performance which shows a tendency for gross ton-miles per train hour to increase faster than net ton-miles per train hour. The first figure advanced from 37,057 in 1946 to 57,012 in 1956, or 53 per cent; the second average lagged behind, showing that efforts to lighten the average wagon tare had not progressed very far. It is a pity that the practice in force for many years of giving comparative figures for net ton-miles per train hour has not been continued.

Passenger Services

Passenger service averages set up new records last year, save for the important one of the number of passengers per car. The speed of passenger trains averaged 40 m.p.h., compared with 35·5 in 1946. Car miles per train hour reached a peak of 397 against 338 10 years ago. Over the same period daily passenger locomotives raised their daily mileage by 47 per cent to 325·6. Despite better service, the number of passengers in the average car declined from 24 to 18. There is no prospect of passenger services ever paying their way in the States. Last year the Pennsylvania Railroad ran some 800 passenger trains a day, carried 62·5 million people compared with 100 million in 1948 and lost about $55 million in operating 28,702,100 passenger train miles.

Rolling Stock Position

Mr. Monroe estimates that the Class 1 railways were 90 per cent "dieselised" in 1956, as diesels handled over 88 per cent of gross ton-miles in freight service, about 91 per cent of passenger car miles and more than 93 per cent of yard shunting service. At the close of the year 3,654 steam locomotives were left, representing a reduction of 34,000 in 10 years, while 26.215 diesel units were in use—an increase of nearly 22,000 over the same period. The railways were able to work the 1956 traffic with 12.000 fewer locomotive units because the diesels were reliable and adaptable. In the first quarter of this year the railways added freely to their stock of diesels and on April 1 had orders for 747 new units outstanding. They also installed over 24,000 new wagons, with round about 100.000 more on order. Forecasts that traffic volume in 1957 would reach the 1956 level have not been fulfilled so far. In 16 weeks to Easter wagon loadings were nearly 5 per cent down. Should an upsurge of traffic occur in the second half of the year, the railways will be well equipped to deal with the situation.

THE SCRAP HEAP

Jubilee Railway Lamp-post

A correspondent states that at Tenby, Pembrokeshire, just outside the station, there is a high lamp-post commemorating the Golden Jubilee of Queen Victoria. The frame of the lamp has disappeared, but the inscription on the stone base of the post reads: "Presented by the Tenby Gas Consumers Co., Ltd., to the Directors of the Pembroke & Tenby Rly. Co., in commemoration of the Jubilee of Her Majesty's Reign, June 20th, 1887." The Pembroke & Tenby Railway was opened from Pembroke to Tenby in 1863, and extended to Whitland, the junction with what is now the Western Region main line to Neyland and Fishguard, in 1866. The local company was absorbed by the Great Western Railway in 1897.

Commemorative Plaque at Berwick

At the suggestion of the civic authorities of Berwick-upon-Tweed, the British Transport Commission has provided a plaque to commemorate the fact that Berwick-upon-Tweed railway station stands on the site of the Great Hall of Berwick Castle, where in 1292 Edward I adjucated on the rival claims to the throne of Scotland of John Baliol and Robert Bruce.

The inscription reads: "This station stands on the site of the Great Hall of Berwick Castle. Here on November 17, 1292, the claim of Robert Bruce to the crown of Scotland was declined and the decision in favour of John Baliol was given by King Edward I before the full Parliament of England and a large gathering of the nobility and populace of both England and Scotland."

The plaque consists of a panel painted royal blue and lettered with white Roman lettering. Two built-up motifs show a lion with the flag of St. George and the Rose of England at one end, and a unicorn with the Cross of St. Andrew and Thistle at the other.

The unveiling ceremony was performed by Mr. T. H. Summerson, Member of the B.T.C. and Chairman of the North Eastern Area Board. The ceremony was attended by civic dignitaries, by Dr. J. W. Armit, Member of the North Eastern Area Board, by Mr. H. A. Short, General Manager and by other officers of the North Eastern Region. A historical pageant followed the ceremony.

Expecting Too Much

Though many hard things are said about British Railways—I have said some myself—two complaints I have just received suggest that some passengers expect too much.

One, a South African, is angry because the booking office would not change a traveller's cheque. This is as reasonable as to object that English banks will not issue railway tickets.

Complaint No. 2, in Liverpool, says B.R. inefficiency is revealed in the announcement that the seat reservations of every Manchester-Euston noon express in August Bank Holiday week are fully booked. Why, my correspondent demands, cannot more coaches be put on? This ignores that locomotive power is not infinitely elastic. B.R., in fact, are running as many relief trains, some bookable, as the traffic will stand. In the same week last year they ran 1,317 extras.—*"Peterborough" in "The Daily Telegraph."*

Careworn?

Hansard, the official Parliamentary record, printing a reply by the Transport Minister, Mr. Harold Watkinson, on the rival virtues of mastic and rolled asphalt, reports him as saying: "I can reasonably be expected to have a life of not less than 10 to 15 years, even under heavy traffic."—*From the "News Chronicle."*

Girl of the Century

"Meet the Girl of the Century," said a card in my bedroom compartment when I boarded the "Twentieth Century Limited" for Chicago.

A Negro attendant offered to find her. As the train started, there was a knock on the compartment door. Outside stood a pretty, brown-eyed girl in a smart uniform and a pillbox beret.

"Want a button sewed on?" she asked.

I said I didn't want a button sewed on—I just wanted to chat.

"Okay," she smiled, sitting down. "What shall we talk about?" . . .

Someone was shouting in the corridor for "the Girl of the Century."

"Oh dear!" sighed Pat, getting up. "Bet someone wants a button sewed on."—*John Sampson in the "Daily Herald."*

What's in a Name?

(On first looking through the summer timetables)

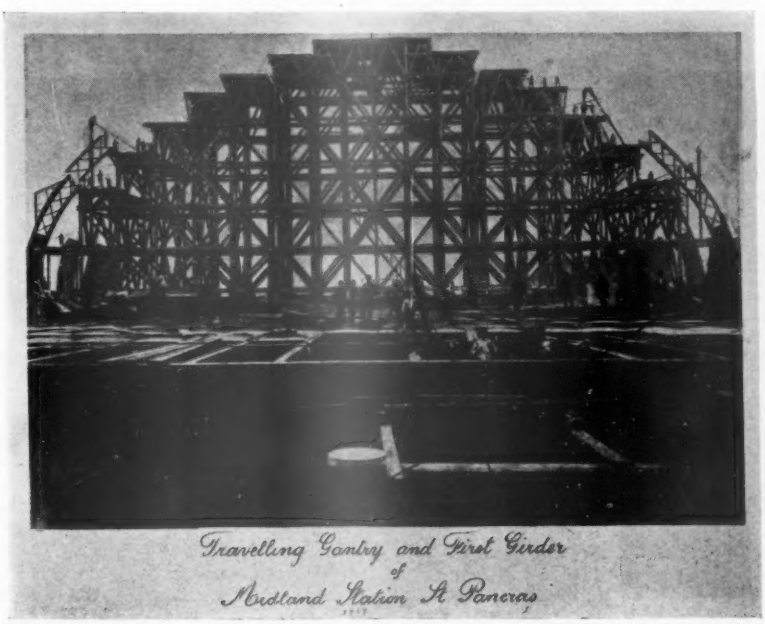
Was the Swan of Avon nodding,
When he asked: "What's in a name?"
Nowadays, is not a label
A pre-requisite of fame?
Timetables are packed with glamour,
Crowded pages all proclaim
How our modern system falls for
Fascination in a name.

Sages, warriors, monarchs, bards,
Team up with felicity
In the ranks of those who serve
Present-day publicity.
Not a stone is left unturned,
Every avenue's explored,
To provide new witnesses
To the power of the Word.

In this spate of brand-new titles,
Half the time my poor old brain
Doesn't know if they're describing
A potato or a train.
But, when monthly calls the postman,
With financial nourishment,
Call him Tom, or Dick, or Harry —
I know just what Shakespeare meant!

A.B.

St. Pancras Under Construction



Photograph taken by the foreman in charge during the building of St. Pancras, Midland Railway, in 1867

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Grass to Prevent Erosion

Experiments are being conducted with test grass strips 100 ft. long to find an effective and economical way of preventing erosion in railway cuttings and on embankments. The grasses have been sprayed with an emulsion to provide an adhesive cover for the seed during germination.

The experiment is being conducted on both sides of a cutting between Camberwell and East Camberwell which has been sown with the special grasses. Results will not be known until next summer. If successful, this method will be much more economical than having to face slopes with stone which is sometimes necessary in bad cases of erosion.

QUEENSLAND

New Bridge over the Haughton River

Estimated to cost £275,500, a new high-level bridge has been sanctioned to carry the North Coast section of the Government Railways over the Haughton River at Giru between Ayr and Townsville. This bridge will replace two existing timber bridges, one 536 ft. long over the main channel and the other 194 ft. long spanning a branch channel. The new structure will be 1,480 ft. in length and will consist of 11 50-ft. steel spans and 31 of 30 ft. carried on concrete piers 28 ft. high above the river bed. A 3 ft. 6 in. minimum headway above highest known flood level will be provided. Though the initial superstructure is designed for single line, the piers are to be built eventually to carry a double-line superstructure, likely to be necessitated by increasing traffic between Collinsville and the Mount Isa mining area. The contract for constructing the bridge has been let to a Sydney firm, the completion time being 24 months.

INDIA

Electrification

The Railway Board recently issued the following statement:

"The Railway Board has decided to undertake further technical studies abroad to determine the suitability in Indian conditions, of the 50 cycle single phase a.c. system of electric traction.

"The final adoption of the a.c. or d.c system for railway electrification in this country being a decision of fundamental and far-reaching importance, a thorough examination of the problems involved is considered essential.

"Originally, it was intended that, in electrifying the new sections, the d.c. system which is already in vogue in this country should be adopted. The matter is however, being re-examined in view of the fact that in recent years several advanced countries have adopted the a.c. system for which certain advantages are claimed. The team of French electric traction experts who visited India a few months ago at the invitation of the Government of India, also reported in favour of the adoption of the a.c. system in India.

"The Chief Electrical Engineers of the Central and Western Railways, Messrs. L. N. Mathur and S. C. B. Mazumdar respectively, have arrived in Europe where they will study the working of the a.c. system in France, the United Kingdom, West Germany, Belgium, the Netherlands and Turkey. They were joined later by Mr. Karnail Singh, Member (Engineering), Railway Board.

"While abroad, the team will also try to locate suitable technical associates who can assist in the execution of electrification projects."

Underframe Manufacture in India

The Railway Board has taken a major step towards self-sufficiency by developing capacity with firms in India for the manufacture of the entire requirements of coaching underframes planned under the 1957-1958 purchase programme.

The indigenous capacity for the manufacture of underframes has so far been insignificant and initial efforts by the Railway Board Development Cell to encourage manufacturers in India to enter the field bore no results. Global tenders were consequently invited for supply from foreign sources.

Before placing orders with foreign suppliers, the Railway Board convened a meeting of indigenous firms and as

New Station at Nakuru, E.A.R. & H.

(See our July 12 issue)

Upper class concourse, showing (left) enquiry and booking office

Part of the station lounge bar and of the upper class restaurant

a result thereof it was possible to locate capacity for the manufacture of underframes in the country. Five firms came forward with offers to manufacture the entire pending requirements of underframes.

The manufacturing capacities of these firms have, therefore, been booked for a supply of 500 broad-gauge, 791 metre-gauge and 60 narrow-gauge bogie coaching underframes.

PAKISTAN

T.B. Sanatoria for Railwaymen

Recent reports on the North Western Railway Sanatorium at Quetta (the Sardar Bahadur Khan Sanatorium named after the Minister for Railways who instigated its foundation) show that some 500 patients, railwaymen and their dependants, have been admitted since the sanatorium started to function in 1953.

The great majority of patients have been discharged fully cured; the average stay has been six months. The sanatorium is located at an altitude of 5,000 ft. in a dry climate considered very favourable for treatment of tuberculosis. The buildings, which include a solarium and the most modern medical and recreational equipment, and grounds together cover 80 acres. The establishment is completely self-contained, with its own water supply and sewerage system. All staff live on the premises. There are at present 125 beds, of which 97 are in wards for railway staff, 16 in wards for their families, and 12 in cottages.

Because East Pakistan is flat, the Eastern Bengal Railway sanatorium could not be sited higher than 500 ft. above sea level, at Kumira, near Chittagong, with a view over the Bay of Bengal. The establishment started to function in June, 1955. It has eight general 10-bedded wards and seven three-bedded, making a total of 101 beds

The number of patients admitted to the sanatorium so far has been about 130, of whom about 60 have been discharged cured.

The foundation of both sanatoria involved a complex staff problem, including the recruitment of medical staff with special aptitude for T.B. work, and sending them to Europe for specialised training.

FRANCE

Magnetic Clearance of Track

When a permanent-way gang has finished work on a section it is necessary to collect all old bolts, coach screws, fish plates, and so on, left on the track after replacement. Until recently this was carried out by hand on the S.N.C.F., the metallic waste being loaded on to a trolley and taken to a depot for sorting.

As the result of research work, a mechanical method of collecting this material from the track has been devised. The body of an open wagon has been adapted to carry an endless conveyor belt, 35 in. wide, which passes through the floor of the wagon. This belt, at its lowest point, runs around a pulley in the form of an electromagnetic drum; the latter, when in the operating position, is located 1-3 in. above rail level. The belt runs upward, through the bottom and one end of the wagon, the highest point being above a second wagon or trolley. The metallic waste is attracted by the magnet and then carried upwards on the conveyor belt. When it reaches the top, the belt runs over an ordinary pulley and the material falls by gravity into the second wagon or trolley.

The belt is driven by an 8-h.p. electric motor, with power provided by a petrol-driven generator set, which also furnishes the current for the electromagnet. With the lower end of the belt leading, the two wagons are propelled at a speed of approximately 4 m.p.h. along the track. Only two men are required, one in the wagon, to supervise the working of the machinery, and the other on the track, to regulate the speed of the vehicles, to indicate the presence of obstacles, and to ensure that all material is collected.

Publications Received

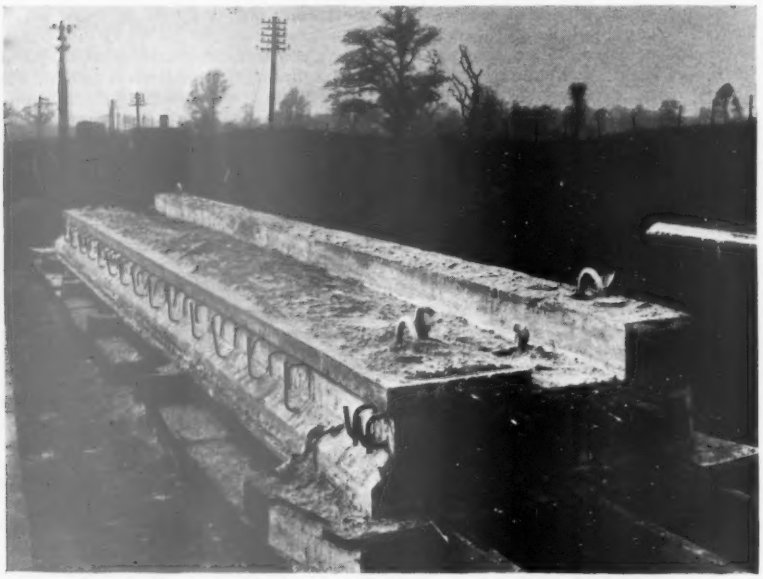
Isambard Kingdom Brunel.—By L. T. C. Rolt. London: Longmans, Green & Co. Ltd., 6 & 7 Clifford Street, W.1. 9 in. × 6 in. 345 pp. + 16 pp. illustration plates. Price 25s. — As the subject of this volume was such an outstanding and individualistic engineer in the first half of the 19th century, it is remarkable that the present volume should be the first full biography of him to have been published since 1870. The *Life* written by his eldest son, which appeared in that year, contains a considerable amount of factual information on Brunel's career, but reveals little of his character or his private life. Some valuable light on the family life of the Brunels was shed by the family tribute *The Brunels: Father and Son* by I. K. Brunel's grand-daughter, Lady Noble, reviewed in our issue of July 15, 1938. In the present volume the author has given us a nicely balanced account of Brunel, as an engineer and as a man. He has had the advantage of access to documents not previously available, and in one important case only recently discovered. That is the private diary which Brunel kept intermittently in 1827-29, which seems to have escaped accidentally from the destruction of many personal papers. At the age of 21 Brunel confided to this diary his ambition "to distinguish himself in the eyes of the public," and revealed an egotism which doubtless played some part in influencing the way in which he exercised both his genius and his enormous capacity for concentrated work. Mr. Rolt disclaims any hero-worship, though he clearly reveals an understandable admiration for his subject. He says that "Brunel regarded himself as Commander-in-Chief of the engineering staff of the Great Western Railway and would brook no interference with them from any man, Directors included." Brunel's railway activities naturally occupy an important share of this volume, but not a preponderating one, and it is more in connection with Brunel's later shipbuilding activities that hitherto unrecorded information is given. The author's lengthy acknowledgments and bibliography reveal the breadth of his researches, and we may be grateful to him for a memorial to an engineering giant of the 19th century.

Vom Adler zum Komet (*From "Eagle" to the "Comet"*): Published by the German Federal Railway through the Athenäum-Verlag, Bonn; 11¼ in. × 8¼ in. 76 pp. Illustrated. No price stated.—This is an excellently produced pictorial outline, formed of over 130 illustrations on art paper, of the development of railways in Germany. Many interesting old engravings are reproduced and the photographs relating to later times are no less attractive and well chosen. The front cover carries a coloured representation of the original train on the Nuremberg-Fürth Railway of 1835 and the diesel "Komet" type train. The introduction is by Dr. Johannes Kurze. The text which divides the pictorial sections states a number of interesting and sometimes amusing facts relating to the early years of railways, with briefer references to later times, and the illustrations include representation of tickets and documents.

Built by Stephenson.—Issued on the occasion of the recent handing-over ceremony of the first Type "A" 1,000-h.p. main-line British Railways diesel-electric locomotive at the Vulcan Foundry Works, the 24-page booklet sketches the early history of the Vulcan Foundry Limited and Robert Stephenson and Hawthorns Limited, associates of the English Electric Group of Companies. Both firms have origins which are closely linked with the beginnings of railways in this country and the world; the publication selects some historical details, particularly of the formation of the companies and the backgrounds and character of the founders. It is brought up to date with a succinct reference to their amalgamation in 1955 with the English Electric Group and to recent locomotives which have been built by them. Copies of the booklet may be obtained from the Vulcan Foundry Limited, Newton-le-Willows, Lancs.

New Method of Concrete Bridge Reconstruction

Depth of superstructure reduced to a minimum



Beams being constructed on platform at Thorpe-le-Soken

CIVIL engineering work in connection with the electrification of the Colchester-Clacton-Walton lines, due for completion in the spring of 1958, is now in progress.

Among the important engineering works which are necessary prior to the electrification of this line on the high voltage a.c. system is the raising or reconstruction of overbridge superstructures to obtain statutory clearance for the overhead wires, and the pantographs.

One bridge, No. 1032 at Cooks Green, carrying the Little Clacton to Great Holland Road over the main London-Clacton line, presented the Eastern Region Engineers with a special problem which has been solved by the use, for the first time anywhere, of a new type of pre-stressed pre-cast concrete slab construction.

To obtain the extra clearance required between the bridge soffit and rail level and to avoid lowering of the track formation, in this case founded on very poor subsoil, or raising the road level, which is undesirable owing to the steep road approaches which already exist, also the delay to construction involved in obtaining the necessary Parliamentary powers to make any alterations to the road levels, the construction depth of the new superstructure had to be reduced to the absolute minimum.

At the request of the County Engineers, and in order to provide realigned approaches in connection with a future road improvement scheme, the bridge was widened and altered from a square to a skew bridge so increasing the span of the deck slabs to 30 ft.

Construction

The new type of slab consists of three or four pre-tensioned pre-cast concrete "I" beams 18-in. wide by 10-in. deep placed side by side, encased with high quality in-situ concrete to form slabs 33-ft. 5-in. long, 4-ft. 8-in. or 6-ft. 3-in. wide but only 16-in. deep. Before placing the in-situ concrete, solid rubber cores are positioned longitudinally between the pre-cast beams to form cable ducts when withdrawn. When the concrete is sufficiently hardened the cores are withdrawn and high strength steel cables inserted in the ducts so formed.

The cables are then post-tensioned by the Magnel-Blaton system and the ducts grouted with cement grout under pressure. The resulting slab, although only 16-in. deep, is capable of carrying the prescribed Ministry of Transport load with an adequate reserve strength.

During construction, the road was closed to all vehicular traffic, and a temporary footbridge was constructed for the use of pedestrians and cattle. The existing road surface and the girder and jack arch superstructure was removed and the abutment widened to accommodate the new skew bridge and built up to the soffit level of the new deck, below which concrete sill beams cap the increased height of the brickwork and act as bearers for the slabs.

The new bridge was designed under the direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region, British Railways; the contractors for the reconstruction of the bridge were Wellerman Bros., Sheffield.

First beam of Cooks Green Bridge in position

The same bridge from the London side, with all beams in position

Light-Weight Diesel Railcars of Tubular Steel Construction

Fully integral design to overcome loading gauge restriction problems

Interior view from driver's compartment showing first class seating with second class compartment at rear

As part of an order for 80 railcars ordered by the British Transport Commission under the railway modernisation programme, the Gloucester Railway Carriage & Wagon Co. Ltd., in collaboration with the Transport Sales Development Department of T.I. (Group Services) Limited, has designed and is building light weight diesel-mechanical railcars of tubular-steel integral design. The cars will operate on suburban services in twin sets of one motor and one trailer coach.

Each motor coach, powered by two 150-b.h.p. B.U.T. horizontal diesel engines underfloor mounted, has a 16 ft. luggage compartment, seating accommodation for 52 second class passengers, and a 4 ft. 7 in. driving compartment. The trailer coach has a similar driving compartment, seating accommodation for 12 first class passengers immediately behind the driving compartment, 55 second class seats and a lavatory.

General particulars are as follows:—

	Ft.	In.
Length over body	57	6
Width over body	9	0
Bogie centres	40	0
Bogie wheel base	8	6
Wheel dia.	3	0

The coach weights incorporate the following breakdown:—

	Tons	cwt.	qrs.	lb.
Power Coach				
Body shell	6	7	3	0
Engines and engine equipment	3	5	0	17
Other equipment and general interior finish	9	4	0	5
Fuel and water	—	7	0	16
Bogie—driving	5	11	0	10
,, trailing	5	9	3	8
Total weight of motor coach	30	5	0	0
Trailer Coach				
Body shell	6	7	3	0
Other equipment and general interior finish	8	8	0	18
Heater fuel and water	—	5	1	0
Bogie—with dynamo	4	19	3	0
,, without dynamo	4	14	0	10
Total weight of trailer coach	24	15	0	0

The interior of the coaches is finished in plastic panels of pastel shades, bonded on hardboard. Plastic covered blockboard windscreens in glazing in aluminium extrusions and supported by stainless steel-clad tubular grabpoles, protect seated passengers from draughts at the doorways. Ceiling panels are of Laconite, and the floor consists of ¾-in. cork sheets framed in timber and sandwiched between ⅛-in. plastic sheeting to give sound insulation and prolonged life.

The railcars, each of which has two 18 in. vacuum brake cylinders, are

General view of Gloucester diesel-mechanical twin car set

fitted with the Gresham & Craven quick release brake system. Two rotary exhausters, belt driven from the engines, are fitted to each motorcoach.

Power for electric lighting is provided by a Stones' generator, engine-driven on the motorcoaches and axle-driven on the trailers. The heating system comprises two 24-V. Smiths combustion oil heaters for each car.

To obtain good acceleration characteristics for a loaded twin coach set using 150-b.h.p. engines attention had to be given to weight saving, while retaining a robust construction.

An integral type of structure assembled from welded units was considered best suited to these requirements. The British Railways loading gauge, with its constriction at platform level and maximum width at seat level, presents a particular problem in the design of a truly integral structure, but by adopting the tubular construction method it was found possible to overcome these complications.

Form of Underframe

There is no underframe in the normal sense, but the weight of metal usually concentrated in the centre longitudes is spread over the whole width of the floor in the form of corrugated steel sections with the corrugations running longitudinally. This corrugated steel floor is cold rolled in 57 ft. lengths to eliminate the difficulty of matching and welding up joints across the coach, to sustain both the buffing and draw loads, and also to support passenger load between crossbars. The bolster, headstocks and buffing gear support structures are built up as unit assemblies. Again for the purpose of light weight and strength, these units are fabricated from steel tube, sheet and plate, permitting the metal to be concentrated where most needed. Diffusion of buffing and draw loads into the corrugated steel floor is achieved by incorporating tubular longitudes immediately behind the buffing and draw gear. To assist the diffusion of end loads into the floor, and to save weight, these tubular longitudes are tapered in wall thickness from the headstocks.

The transfer of load from solebars in the body side was effectively achieved by cranking the pillar sharply at floor level, and the pillar is actually built into the solebar to ensure efficient transfer of load without giving rise to sudden stress changes. Calculations show that the forces in the pillars are at maximum around floor level and determine the size of pillar sections in this area. At the cantrail, this size of pillar section was greater than necessary, and advantage was taken of the weight saving made possible by using a tube whose wall thickness varies.

The tubular pillars incorporated in this structure are of constant thickness over the bottom 18 in. and the wall thickness then tapers over a length of 12 in. Thereafter the thickness remains constant at the thinner gauge up to cantrail level. The use of this cranked butted tube for the body side pillar overcame the load gauge problem at solebar level, saved weight, and enhanced the stability and efficiency of the body side by permitting a good pillar attachment.

For efficient use of metal, compressive strength and stability, tube was chosen as the basis of a fabricated solebar. A stiff deep box was required to form the cantrail and this was fabricated from cold formed sections generally in Cor-Ten steel. Considerable attention was paid to the connection of pillar to cantrail since this connection was required to transfer shear into the cantrail.

The body end and the roof between cantrails are built up in much the same way as on the standard British Railways coaches. It was felt that shear lag across the roof panels would reduce the effectiveness of incorporating extra framing or purlins, and therefore the cantrails were considered as the main load-carrying members.

Below is a list of the principal sub-contractors:—

Cold formed sections	Metal Sections Limited
Tubing. Seat frames	Accles & Pollock Limited
Corkboard sandwich flooring	Insulation Equipments Limited
Cor-Ten body panels	Steel Co. of Wales Ltd.
Roof sheets	John Summers Limited
Cast alloy doors	Deans & Son (Yorkshire) Ltd.
Electric lighting	J. Stone & Co. (Deptford) Ltd.
Insulation	J. W. Roberts
Axleboxes	Skefko Ball Bearing Co. Ltd
Wheels and axles	Taylor Bros. & Co. Ltd.
Laminated springs	English Steel Corpn. Ltd.
Coil springs	Turton Bros. & Matthews Ltd.

Longitudinal corrugated steel sections forming underframe

Improved Passenger Accommodation in Prototype Coaches

Doncaster-built vehicles embodying features developed by British Railways staff

Reclining and revolving seats and smaller windows are fitted to one of the first class open coaches

SIX passenger coach prototypes, built by British Railways at the Doncaster Carriage Works, were among the exhibits at the Modern Railway Travel Exhibition, held at Battersea on June 28-30. In all, 13 vehicles, incorporating improvements in passenger comfort, were on view, seven of these, built by private contractors, have been the subject of descriptive articles in our issues of July 12 and 19.

Like the contractor-built vehicles, the six Doncaster-built coaches have been fitted out to test the reaction of the travelling public to new features such as roomier compartments, revolving and reclining seats, air-pressure ventilation and heating, automatic temperature control, double-glazed windows, window demisting, and improved heat and sound insulation.

While all the features of the prototype carriages will not necessarily be incorporated in future coaching stock, they represent, it is officially stated, a range from which the final selection will be made in the light of public reaction and practical experience. These vehicles are of the following types:—(1) first class open saloon (reclining seats); (2) first class open saloon (fixed seats); (3) first class compartment; (4) second class compartment; (5) second class open saloon (64 seats); and (6) second class open saloon (48 seats).

The first four mentioned are of new construction throughout, whereas both the remainder are standard coaches, which have been taken out of service, stripped and refitted at the works. All six, however, embody improvements developed by British Railways designers and design consultants, and recommendations of two committees set up by the British Transport Commission. One of these committees dealt with carriage heating, and the other with various amenities in standard carriages.

Improved Heating System

The vehicles are fitted with an improved heating installation designed to be adopted to operate on either locomotive steam or electricity. Features of this dual-heating system are demisting heat units incorporated in the windows and improved equipment for thermostatic heat control. The standard of insulation against vibration and noise, and heat, is considerably in advance of existing British Railways practice. Also, seats in all vehicles are of improved design; sliding windows are larger than those now in use; and a greater illumination from the lighting equipment has been achieved.

As with all the prototype vehicles, the underframe, bogies and brake gear, are to standard British Railways design, and the bodysides follow generally the standard pattern of British Railways coaches. The four newly constructed vehicles, however, are a departure from the standard profile in that the bodyside has been flattened between the waist and cantrails to dispense with the setting of panels at the window openings. Studding, as a means of securing window glasses and mouldings, has been eliminated in all six vehicles. Drainage of window condensation has been improved by the inclusion of a metal drain channel close to the window glass. A development of what is termed the experimental heating system, condensate control is fitted to all coaches. All ventilators are 1¼ in. deeper than the present design, and all exterior paintwork is to latest approved materials and colours.

First Class Open Saloon

Reclining and revolving seats form one of the obvious features of one of the two first class open saloons. Externally, the design differs from normal in the increased number of windows. The size of windows fitted is 3 ft. compared with the standard 4-ft. size. This size has been used to permit full vision for any person seated in the coach. All the windows in the saloon nearer the toilet end of the vehicle are Pilkington patent double glasses, which have been installed as a comparison to the single glasses in the remaining saloon. Two toilets of standard dimensions are provided at one end of the vehicle.

The bodyside roof and ends of the vehicle have been lined with Poresta. This has also been used as a floor insulation, which is sandwiched between upper and lower plywood panels, the total thickness of floor being 2¼ in.

Bodyside heaters placed at floor level, working on the convector principle run the full length of both saloons. The temperature of both saloons is controlled by a manually operated regulator situated in the centre lobby. Also, a thermostatic control is fitted in the ceiling of one saloon behind the light fitting. The toilets are heated by convector heaters while end lobbies are warmed by radiators with a steam supply direct from the main.

The ceilings of end lobbies are covered with white Formica while the ceiling of the centre lobby is covered with aspen veneers. The cross divisions separating the end lobbies from the saloons, are covered with teak matchboarding. The cross divisions between the centre lobby and saloons are faced with green matt Warerite; the toilet walls are faced with grey Formica.

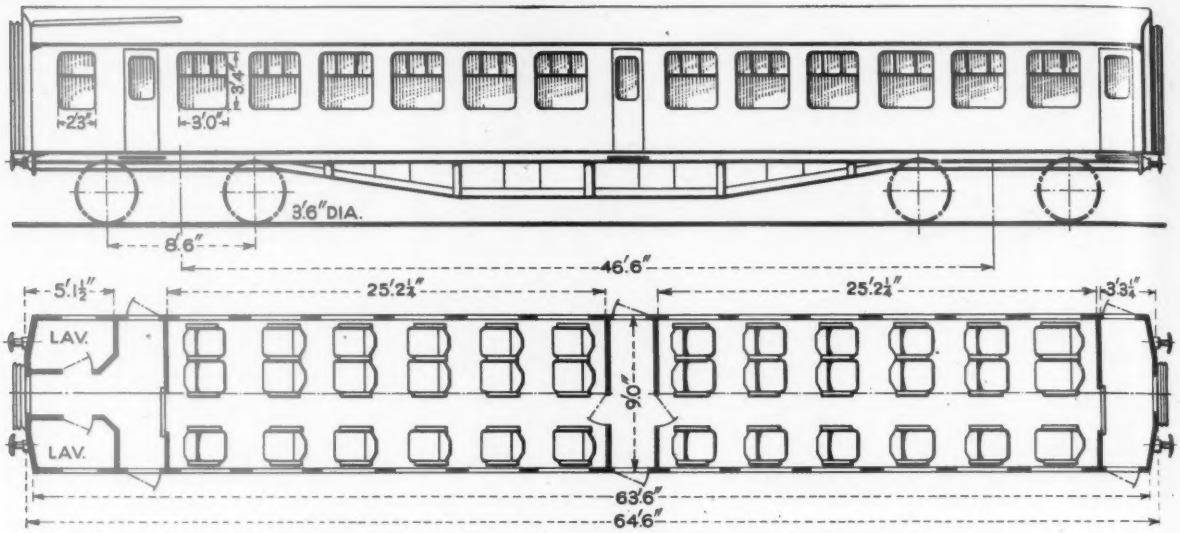
Saloon sliding and hinged doors together with the vestibule sliding and hinged doors are manufactured from teak and panelled with teak where required; all timber and veneers are french polished. Toilet doors are faced with teak veneers. Body doors are fitted with grey Formica or teak panels, and solid teak castings, as the adjoining decorations render the particular finish necessary. Metal fittings in lobbies are aluminium anodised in a light gold colour.

Toilet ceilings are covered with ivory Formica. The walls and door are faced

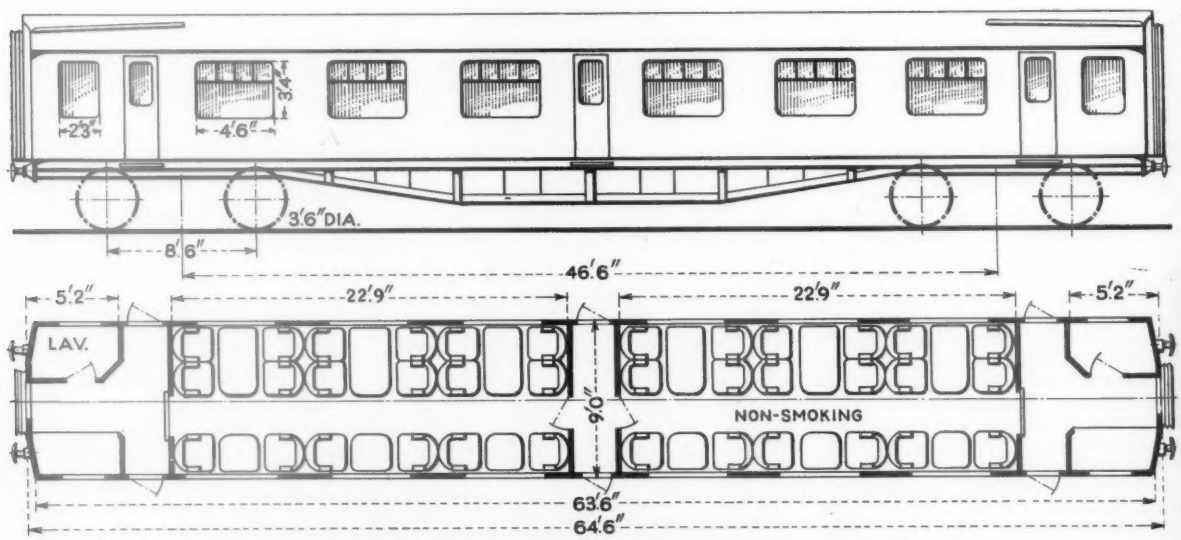
with white glossy Formica. Earthenware fitted in toilets of all six vehicles has a white porcelain finish, while the toilet seats and lids have been given a black finish as a contrast.

The two saloons have been designed with the requirements of revolving and reversible seats particularly in mind; the centre pivot of each chair is in line with the centre of the window. Chairs next to cross divisions are non-reversible. The mechanism allows of four positions of reclination up to a maximum of 7 in. movement. When the foot pedal in the chair base is depressed, the chair can be revolved, and a push button in the side of the elbow releases the reclining mechanism. Ash trays are fitted in the elbows so that one is available for each passenger.

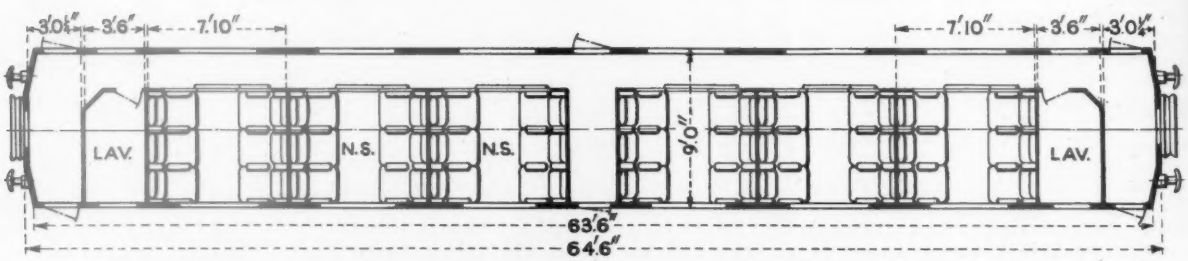
Ventilators are fitted with anti-sun



Elevation and plan of first class open coach : note windows in line with revolving seats



Fixed seats and tables form a feature of the other first class open prototype coach



Layout of prototype first class compartment coach ; the compartments are wider than standard

glass and curtains have been suspended from the bottom rail of the ventilator as an aid to cleanliness. Aluminium extrusions have been used as a facing feature on the sills and slips. A special design has been made of the net rack which in addition to carrying the passengers small luggage has a receptacle for holding small personal effects.

The vehicle uses fluorescent lighting throughout the 4-ft. 40-W. tubes being illuminated by current supplied from a rotary convertor, with an output voltage of 220 V. A second transformed voltage of 110 V. is used for the shorter 1-ft. 6-in., 15-W. tubes in the lobbies and toilets. The fitting for housing the larger tubes is a special feature of the ceiling, running the full length of each saloon; ventilators are arranged behind this fitting. The convertor is housed beneath the underframe and operated from the generator and battery system which is the standard equipment of 24-V., 70-A. output, and 280 A.-hr. cells. The décor was designed by Mr. Trevor Dannant.

The fixed seating and lighting arrangements are features of the second prototype first class open saloon

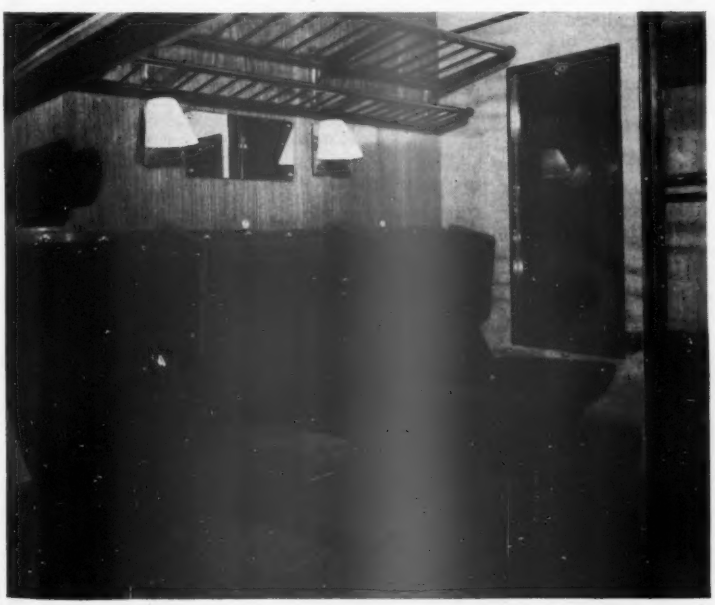
First Open with Fixed Seats

The second prototype of a first class open saloon differs considerably from the one described above, particularly in the use of fixed seats and tables. The size of the compartments has been increased from 6 ft. 9½ in., as is standard, to 7 ft. 7 in., thus reducing the number from seven to six, to provide additional comfort. One toilet is provided at each end of the vehicle and these are of a size comparable with the standard type of "twin" toilet. Also at each end luggage storage racks are provided. The bodyside roof and ends, and floor insulation are treated as for the previous coach.

The two saloons are each divided into three compartment sections. Chairs have been designed so as to provide an individual seat for each person; the height of the back has been lowered. The backs of each set of chairs are spaced from those adjoining, in order to give an impression that the chairs are separate units. Room has been left between the backs of seats so that hand luggage can be comfortably housed.

A special "sofit" board has been fitted in the ceiling as a feature and to give a housing for electric light fittings, while also providing a means of ventilation. The lighting in this vehicle is a combination of fluorescent tubes and incandescent lamps. Four 4-ft. 40-W., four 2-ft. 20-W., and five 1-ft. 6-in. 15-W. fluorescent tubes are fitted and current is supplied in a similar manner to the other first class open coach described above. The twelve 40-W. incandescent lamps, situated above each saloon table, are housed in the net racks and are part of the full decorative scheme. The design consultant for this coach was Dr. F. F. C. Curtis.

The 48-seat second class open saloon



The redesigned head and armrests in the first class compartment coach prototype is seen in this interior view

Interior of second class open saloon coach showing tables and seating

with fixed seating and tables, is rebuilt from a standard coach, and as in the case of the 64-seat version described below, the size of the eight compartments has been retained. The bodyside roof and ends of the vehicle, together with the floor, have been sprayed with asbestos insulation to a thickness of $\frac{1}{8}$ in.

The three saloons, that is, two of two compartment sections and one of four compartment sections, have been decorated totally in plastics. The ceilings have the addition of a "sofit" board to fix lamp fittings and ventilation.

A slight reduction in the seat width has allowed a greater incline to the backs. The space between the chairs can be used for luggage storage. With the removal of table light fittings, greater rack accommodation has been provided and a more general illumination has been obtained. The loading on the standard ceiling light fitting has been increased from 60 to 80 W.

The décor of the saloons was designed by Dr. F. F. C. Curtis, and consists of a ceiling in ivory matt Formica, divisions of tan glossy Warerite, bodysides of ivory glossy Formica, timber casings and mouldings which, with the exception of the window sills, are covered with Pagwood mahogany polished to tone. Floor covering is of granite linoleum. Tables are of mahogany and plywood covered with tan glossy Warerite, with black enamel leg tubes.

Anodised aluminium luggage racks are fitted, with other fittings of chrome-plated brass.

Sixty-four Seat Open Saloon

In this vehicle, which has also been modified from an existing coach, all details as to toilets, bodyside roof and insulation, saloon layout and finish, seating construction, ventilators, ashtrays, luggage racks, and lighting equipment are similar to the coach described previously.

White matt Formica is used to cover the ceilings of the lobbies, toilet walls and body ends faced with yellow Warerite, while the cross divisions are covered with stardust blue matt Warerite. Mahogany luxwood Formica is used on the doors except for toilet doors which are faced with blue matt Warerite.

The main point of difference is, of course, the saloon layout, as in this vehicle tables have been arranged for four persons only, thus increasing the accommodation from 48 to 64.

The saloon décor, also the responsibility of Dr. F. F. C. Curtis, is white matt Formica ceiling, bodysides of yellow matt Warerite, divisions of blue matt Warerite with timber casings and mouldings of mahogany finished to tone with the scheme. Granite colour linoleum is fitted to the floor while tables are made from mahogany and plywood and covered with blue matt Warerite. Racks are in anodised aluminium while the other metal fittings are of brass with bright chrome finish, with the exception of the black enamelled table leg tubes.

First Class Compartment Coach

In both first and second class corridor coaches, features common to both coaches are the method of temperature control in each compartment, the system of toilet and corridor heating, and details as to corridor design and finish, bodyside interior panelling, the finish of toilet and body doors, window fittings, toilet layout and fittings, compartment and corridor lighting, and generator equipment.

The compartments of the first class side corridor prototype coach have been increased in size from the normal 7 ft. 2 in. to 7 ft. 10 in., which has reduced the number from seven to six, thus providing additional leg room. Compartment temperature is controlled both by manual and automatic regulation, and toilets and corridor are also heated with convector heaters situated at most suitable points.

The ceiling of the corridor follows the line of the body roof in contour to provide greater accessibility to steam heating pipes and electric cables.

The compartment sliding doors and doorways are $2\frac{1}{8}$ in. larger than the standard door. The body doors and vestibule sliding doors are also fitted with Australian walnut panels in Formica. Window rods are treated with a black bronze finish, while the window rod ends are polished chromium-plated, as are all of the other corridor and lobby fittings.

Each of the compartments, two of which are non-smoking, have been given individual finishes and treatment to compare public reaction. The seats and backs are of entirely new design and each passenger is provided with a separate seat. The height of the seat back has been reduced 4 in. from standard. Cleaning at the back of the heaters is readily effected because the seats can be entirely removed for the purpose.

Each compartment retains the normal four 15-W. back light fittings but one ceiling fitting with 60-W. bulb has replaced the two usual in British Railways standard coaches.

Some of the compartments are designed by Dr. F. F. C. Curtis; while they all have ceilings of white matt Formica and polished brass fittings, one is finished with teak veneers while another is in mahogany. The décor of the other compartments is by Mr. T. Dannatt. Features common include, ivory matt Formica for ceilings, racks of black bronze finish with other items of aluminium in light gold anodic finish, satin brass finish ash trays and ventilators and curtain cover in satin chrome finish. The panel under the window is covered with evergreen matt Formica and timber casings and mouldings are of polished teak. One compartment, however, has teak veneers on cross divisions, white beech veneers on corridor divisions and bodyside walls, and berry red matt Formica covering the table under the window. The other compartment has European black walnut veneers on cross divisions, sawn birch veneers on corridor and bodyside walls and the tables covered with steel blue softglow Formica.

Second Class Corridor Coach

As in the case of the first class corridor coach, greater spacing between the seats has been achieved, the compartments having been increased in size from 6 ft. 3 in. to 6 ft. 9 in., reducing the number from eight to seven. Insulation of bodysides, roofs and ends is with Fibreglass. The British Railways standard size of sliding door and doorway has been retained.

As in the case of the first class corridor prototype coach, each of the compartments, two of which are non-smoking, have been given individual finishes and treatment. Seat and back profiles follow standard design with the exception that the seat is now 1 in. wider and elbows have been softened in such a manner as to give more comfort when four passengers are seated on one side.

As before some of the compartments have been suggested by the two British Railways design consultants previously mentioned. Materials used in each of four designs for ceiling, compartment panelling, and timber mouldings are, in their respective order, as follow:—

Polar white matt Formica, softglow primrose matt Formica, polished mahogany; polar white matt Formica, softglow dove grey matt Formica, polished mahogany; ivory softglow Formica, pompadour blue coarse linette matt and softglow matt Formica, mahogany painted dove grey; softglow dove grey matt Formica, cream coarse linette matt Formica and softglow dove grey matt Formica, mahogany painted dove grey.

The following list includes the principal sub-contractors:—

Plastic surfaced veneers	Thomas de la Rue & Co. Ltd. Bakelite Limited
Linoleum	Linoleum Manufacturing Co. Ltd. M. Nairns & Co. Ltd.
Flooring (underlay)	Jabalo Limited
Finishes	Cellon Limited
Plywood veneers	William Mason Limited
Revolving seats	G. D. Peters & Co. Ltd.
Seating material	Vi-Spring Products Limited Pirelli Limited Dunlop Rubber Co. Ltd. Bintex Limited
Moquette	T. C. Firth (1955) Limited J. Wood & Co. Ltd. J. Holdsworth & Co. Ltd.
Leather	Connolly's Limited
Carpeting	T. C. Firth (1955) Limited S. J. Stockwell & Co. (Carpets) Ltd. J. Templeton & Co. Ltd.
Racks and fittings	James Gibbons Limited W. Deans & Son (Yorkshire) Ltd.
Light fittings	A.E.I. Lamp & Lighting Co. Ltd.
Light shades	Quitman & Co. Ltd.
Curtains	Edinburgh Weavers Story (Fabrics) Limited Donald Bros. Ltd.
Door droplights	Beckett, Laycock & Watkinson Limited
Vynide blinds	Imperial Chemical Industries Limited
Glass for windows	Pilkington Bros. Ltd.
Fibreglass	Gilmour, Smith & Co. Ltd.
Earthenware toilet fittings	Twyfords Limited

RAILWAY NEWS SECTION

PERSONAL

The President of the Board of Trade has appointed Mr. W. R. Black, J.P., to be Chairman of the National Research Development Corporation.

Mr. P. Stephenson, who, as recorded in our June 14 issue, has been appointed Regional Establishment & Staff Officer, North Eastern Region, British Railways, began his career with the former North Eastern Railway in the Hull District Superintendent's Office in 1922. After being employed on railway and docks operating and staff work he was appointed in 1938 to a position in the Staff Section of the L.N.E.R. Divisional General Manager's Office at York. He subsequently served as Staff Assistant for the departments of the Operating Superintendent, Locomotive Running Superintendent, and Passenger Manager, Scottish Area, Edinburgh. In 1946 he was appointed Staff Assistant to the Operating Superintendent, Southern Area, Liverpool Street, London. During this period Mr. Stephenson was a member of many of the staff negotiating bodies, including L.N.E.R. Sectional Councils. Mr. Stephenson returned to York in 1948 as an Assistant in the Regional Staff Office and, in 1951, was appointed Assistant Regional Staff Officer, North Eastern Region. Since October, 1956, he has been assigned special duties, being designated temporary Assistant to the General Manager (Administration). Mr. Stephenson, who took up his new duties on June 10 succeeds Mr. Collingwood Cooper, whose retirement was recently recorded.

British Railways, London Midland Region, have announced the appointment of Mr. James Royston, Divisional Operating Superintendent, Manchester, as Divisional Traffic Manager for the Manchester Division. This is the first appointment under the re-organisation scheme of the London Midland Region.

In our June 28 issue, we incorrectly stated that Mr. Yentis left Unilever as Head of Work Study Department, Unilever Limited. His actual designation is given above. Mr. C. T. Gould is Head of Production Study Department, Unilever Limited.

Mr. Reginald Hayes, Vice-President & General Manager, Atlantic Region, Canadian National Railways, is retiring at the end of the current month.

Mr. P. Stephenson
Appointed Regional Establishment & Staff Officer, North Eastern Region

Dr. F. Schelp
Re-appointed a Member of the Board, German Federal Railway

Mr. S. B. Yentis, A.M.I.C.E., who, as recorded in our June 28 issue, has been appointed Works Study Assistant, British Transport Commission, obtained his diploma at Northampton Engineering College and held an appointment in the Chief Civil Engineer's office of the Western Region at Paddington from 1945-52. During this period he was seconded to the Southern Region to study the control of productivity schemes and later became Work Study Assistant to the Chief Civil Engineer. He has specialised in the application of work study and, on leaving British Railways in 1952, joined Unilever Limited as a Work Study Officer. Before taking up his last post as Head of the Work Study Department of the T. Wall & Sons (Meat Products) Ltd., a subsidiary of Unilever Limited, he was Senior Assistant of the Production Analysis Department of Holland and Hannen & Cubitts (building and civil engineering contractors). Mr. Yentis is a part-time lecturer and has given public practical demonstrations of work study.

Dr. Fritz Schelp, who, as recorded in out June 14 issue, has been reappointed a member of the Board of Directorate of the German Federal Railway, was born in Buenos Ayres on March 8, 1898, and educated at Bremen Grammar School. He entered the railway service in 1927, being engaged until 1932 with Reichsbahndirektion at Hamburg in the commercial and personal administrative departments. Dr. Schelp was subsequently appointed District Superintendent at the Verkehrsämte at Göttingen, Weimar and Hamburg, and, from 1934 to 1940, as Divisional Superintendent with the Reichsbahndirektion at Hamburg. From 1940-41 he served with the Generalbetriebsleitung Süd at München, subsequently being appointed to the Reichsverkehrsministerium in Berlin, where he later presided over the Commercial & Tariff Department. Dr. Schelp was President of the Commercial Department, Eisenbahndirektion, Hanover, until May, 1950, when he was appointed to his present position of President, Eisenbahndirektion, Hamburg.

Mr. G. G. Goodings
Appointed Traffic Manager, Norwich, Eastern Region

Mr. E. J. Stephens
Appointed Traffic Manager, Doncaster, Eastern Region

Mr. W. Clegg
Appointed District Goods Superintendent, Leeds, N.E. Region

Mr. G. G. Goodings, Acting Area Freight Manager (B.R. & B.R.S.), Norwich, who, as recorded in our March 8 issue, has been appointed Traffic Manager, Norwich, entered the service of the Great Eastern Railway at Norwich in April, 1917. He was appointed a Traffic Apprentice in March, 1924, and after training at stations, depots and District Offices, was appointed Supernumerary Assistant to the Parcels Agent, Liverpool Street, in September, 1927. In January, 1928, he moved to Nottingham as Assistant to District Manager. Mr. Goodings returned to London in 1933 as Assistant to Cartage Manager and became District Goods & Passenger Manager, Ipswich, in August, 1936. He was appointed Acting District Goods & Passenger Manager, Norwich, in March, 1944, and was confirmed in this position in January, 1945. His appointment as District Commercial Superintendent, Norwich, came in April, 1950, and in January, 1951, he was appointed Acting Area Freight Superintendent (B.R. & B.R.S.), Norwich, this latter post being re-designated Area Freight Manager, in January, 1955.

The British Transport Commission announces the following appointments:

General Staff of the Commission

Mr. F. G. Manning, Administration Officer, to be Assistant Director, General Matters, Finance Department, Funds & General Division.

Mr. P. A. Satchwell, Work Study Officer, British European Airways, to be Work Study Assistant, Manpower Adviser's Department, Work Study Division.

British Railways Central Staff

Mr. H. Leyshon, Assistant Works & Equipment Section, General Duties Department, to be Assistant (Development), Operating & Motive Power Department.

Mr. B. Reynolds, Senior Executive Assistant, Signal Engineering Department, London Transport Executive, to be Signal Development Assistant, Signal Engineering Department.

The following staff changes are announced by British Railways, London Midland Region:—

Mr. H. H. Edwards to be Divisional Police Superintendent, Manchester.

Mr. C. R. Bennett to be Assistant (Modernisation), Operating Officer's Office, Euston, located Crewe.

Mr. F. H. Newman to be Assistant (Modernisation), Operating Officer's Office, Euston.

Mr. W. S. Creighton to be Assistant District Passenger Manager, Liverpool.

Mr. H. Geoghegan to be Assistant District Commercial Manager, Derby.

Mr. H. Pargiter to be Assistant District Commercial Manager, Barrow.

Mr. J. McLeish to be Goods Agent, Aston.

Mr. B. Blackburn to be Station Master, Bolton, Trinity Street.

Mr. J. Jones to be Yard Master, Brent.

Mr. E. J. Stephens, District Operating Superintendent, Doncaster, who, as recorded in our March 8 issue, has been appointed Traffic Manager, Doncaster, was educated at Hereford, University College of Wales Aberystwyth, and Lincoln College, Oxford. He joined the Royal Horse Artillery in the 1914-18 war obtaining a Commission in the Special Reserve of the Royal Horse and Field Artillery and saw active service with the 53rd Welsh Division in Palestine and Egypt. Mr. Stephens entered the railway service in November, 1922, as a Traffic Apprentice in the Chief Goods Manager's Office at York, and after a period of training became Assistant Yard Master at Doncaster in October, 1926. He later served successively as Yard Master, Wath; Assistant District Operating Superintendent, Doncaster; District Superintendent, Lincoln; and, in August, 1943, was appointed to his present position of District Operating Superintendent, Doncaster.

The following appointments have been announced by the Canadian Pacific Railway: Mr. W. D. Dickie to be Assistant Chief of Motive Power & Rolling Stock; Mr. C. W. Parker to be Chief Engineer; Mr. H. W. Hayward to be Works Manager of the company's Angus shops in Montreal.

Northern Aluminium Co. Ltd. have announced the following appointments: Mr. C. J. Buchanan-Dunlop to be Manager of the Sales Administration Division, Banbury; Mr. J. A. Ambler to take charge of a newly-formed Market Research Section.

Mr. D. G. Williams, Assistant District Engineer, Brighton, Southern Region, British Railways, has been appointed District Engineer, Exeter.

The following appointments are announced by the North Eastern Region of British Railways:—

Mr. W. Clegg to be District Goods Superintendent, Leeds.

Mr. E. McClelland to be District Operating Superintendent, Darlington.

Mr. J. K. Firth to be District Goods Superintendent, Newcastle.

Mr. D. S. Lewis to be District Commercial Superintendent, Middlesbrough.

Mr. N. R. A. Paton to be District Operating Superintendent, Newcastle-upon-Tyne.

Mr. W. Clegg, who, as recorded above, has been appointed District Goods Superintendent, Leeds, North Eastern Region, British Railways, commenced his railway service with the London & North Eastern Railway at Manchester in 1928 and after experience in various departments was appointed a Traffic Apprentice in 1937. On completion of his training he held posts in the Commercial and Operating Departments and in 1947 was appointed Assistant to the District Superintendent at York. In 1949 he became Stationmaster, Leicester Central, and in 1951 Assistant District Traffic Superintendent, Ayr. Mr. Clegg moved to Newcastle upon Tyne in 1953 to become Assistant District Goods Manager, and in November, 1956, was appointed Assistant to the Chief Commercial Manager (Sales) at York, the position he now leaves.

British Road Services have announced the appointment of Mr. E. G. Marsden, Chief Officer (General Duties), B.T.C. Headquarters, as Secretary, British Road Services. He succeeds Mr. J. L. Willoughby, who has been appointed Traffic Manager, B.R.S. (Parcels) Limited.

Mr. Henry T. Stead has been appointed Works Manager of Charles Roberts & Co. Ltd.

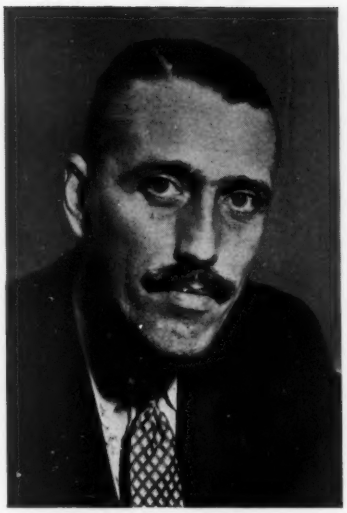
Mr. Douglas V. Gonder has been appointed Vice-President & General Manager, Atlantic Region, Canadian National Railways.

Mr. N. R. A. Paton

Appointed District Operating Superintendent, Newcastle, N.E. Region

Mr. W. Taylor

European General Freight Agent, C.N.R. 1948-57



Mr. J. Matthews

Appointed European General Freight Agent, C.N.R.

Mr. Norman R. A. Paton, District Operating Superintendent, Sunderland, North Eastern Region, British Railways, who, as recorded above, has been appointed District Operating Superintendent, Newcastle upon Tyne, began his railway service at Cowdenbeath in 1934. After experience at various stations in Scotland, he was appointed a traffic apprentice in 1937, and on completion of his training, served in H.M. Forces from 1940 to 1946. On demobilisation, he took up a position in the District Superintendent's Office, Nottingham, moving later that year to Nottingham as Supernumerary Assistant to the District Goods & Passenger Manager. In 1947, he became deputy head of the Development & Statistical Section of the L.N.E.R. Passenger Manager's Office, Liverpool Street. He returned to Nottingham in 1948 as Supernumerary Assistant to the District Superintendent, two years later becoming Assistant to the District Operating Superintendent, Nottingham. In 1953 he was appointed Assistant District Operating Superintendent, Manchester. He moved to a similar position at Nottingham in 1954, and in September, 1955, was appointed District Operating Superintendent, Sunderland, the position he now leaves.

Mr. Bashir Ahmed Khan has been appointed Chief Engineer, Eastern Bengal Railway, in succession to Mr. S. B. Azid who has been appointed General Manager, Chittagong Port.

Mr. W. C. Hatch, who recently retired as Traffic Controller, British Transport Commission, after 51 years of service, received gifts from the B.T.C. and his colleagues at the Docks, at a presentation in the Chief Dock Manager's Office on July 15.

Mr. A. A. Ewing is relinquishing office as the Institute of Transport's Hon. Corresponding Member for Singapore on his retirement as General Manager of the Singapore Traction Co. Ltd. Mr. G. G. Wilson, who is succeeding Mr. Ewing as General Manager, will assume the office of Hon. Corresponding Member for the Institute in Singapore.

Mr. J. McWilliams has been appointed Regional Manager, Scotland, for A.C.V. Sales Limited.

Mr. William Taylor, General Freight Agent for Canadian National Railways in Europe with headquarters in London, who, as recorded in our July 5 issue, retired at the end of last month after some 50 years of service with the company, was born at Formby, Lancs, in 1892. He entered railway service in the Traffic Department at Liverpool in July, 1907, transferring to Antwerp in September, 1913. On completion of war service in 1919, he rejoined the company at Liverpool and was promoted to Chief Clerk, transferring to Manchester in 1921. He was appointed Special Agent, Antwerp, in June, 1922, and came to London in 1940. He became Acting City Agent, London, in July, 1942, returned to Antwerp as General Agent in June, 1947, and was appointed General Freight Agent in May, 1948. In addition to his duties on behalf of the railway, Mr. Taylor played a considerable part in handling shipping interests connected with the Canadian National Railways.

Transport Users' Consultative Committee South Western Area

The following have been appointed members of the new Transport Users' Consultative Committee for the South Western Area until June 30, 1959.

Chairman Colonel Mark Whitwill.

Members

(Representing Agriculture): Messrs. B. R. Archer, J. Laity.

(Representing Industry): Messrs. C. J. Horsley,* G. H. Bedford.

(Representing Commerce): Messrs. N. E. Harper, M. L. Lidington.

(Representing Shipping): Councillor A. L. Duggan.

(Representing Labour): Messrs. A. S. Dopson, H. Forrest.*

(Representing Local Authorities): Co. Councillor E. G. Lilley, Co. Councillor F. G. Wilkins, Alderman L. N. Punter, Councillor G. F. Drake.*

(Representing the British Transport Commission): Messrs. H. E. R. Bastin,* I. R. Patey.*

(Additional Members): Mrs. P. Davidson, Mrs. I. Seed.

Secretary: Mr. P. H. Sims.

* Indicates a new member

Mr. John Matthews, District Freight Agent, Liverpool, Canadian National Railways, who, as recorded in our July 5 issue, has been appointed General Freight Agent in Europe with headquarters in London, was born in Mortimer, Berkshire, in 1918 and educated at Plymouth College. He served with the Western Region of British Railways before joining the service of the C.N.R. in January, 1950, as Assistant to European Manager. In 1955 he spent two months in Canada studying the operations of the Canadian National system, with particular emphasis on the company's freight operations, prior to taking up his appointment as District Freight Agent in Liverpool, the position he now leaves.

The Council of the Institute of Transport has awarded the Robert Bell Travelling Scholarship of up to £200 to Mr. T. C. Thomas to assist him to travel in the United States with a view to observing commercial practice (freight) on United States Railways. Mr. Thomas is Goods Agent at Wrexham, British Railways (Western Region).

The British Transport Vehicle Manufacturers Association has re-elected Lt.-Commander J. W. Thornycroft, R.N., Retd., as chairman for the third successive year.

Mr. M. C. Lloyd, Works Director of F. H. Lloyd & Co. Ltd., has been appointed Assistant Managing Director of that company.

Mr. S. J. Wrigglesworth has been appointed Deputy Managing Director of Oldham & Son Limited, and Mr. Orlando Oldham has been appointed his personal assistant.

Mr. Vincent Watkins has been appointed a director of Steel, Peech & Tozer, a branch of the United Steel Companies, Ltd.

Mr. H. V. Stanton has been appointed Sales Engineer for George Ellison Limited.

Mr. S. A. Knott has been appointed to the board of Charles Roberts & Co. Ltd.

We regret to record the death, on June 27, at the age of 61, of Mr. R. V. D. Dirby, Manager of the Eastern Division of Metropolitan-Vickers Electrical Export Co. Ltd.

NEW EQUIPMENT AND PROCESSES

Heavy Duty Production Drill

RECENTLY added to the manufacturer's range of tools are two ¼-in. capacity electricity drills of general, and heavy-duty, design. The heavy-duty model, KG2c, which has many applications, including, for example, continuous drilling for thin sheet metal fabrication, and drilling holes in bulkheads for cables, incorporates a patent relating to the switch insulation.

A plastic lining is permanently moulded on to the inside of the motor frame in the switch handle to provide protection from accidental contact of live leads or components with the metal casting. In addition, the switch cover and end casing is made of toughened plastic insulating material which completely shrouds not only the switch movement but all the electrical gear of the motor. With these features, the drill conforms to international safety regulations. TV suppressors are fitted as standard and a compartment is provided for a radio suppressor if required. Additionally it is provided with a steel chuck shroud for operator's protection.

The specification includes: spindle speed, running light, 2,800 r.p.m.; spindle speed on full load, 1,600 r.p.m., and full load input, 260 W. The overall length is 8½ in. and the distance from centre of spindle to outer casting, 1$\frac{3}{32}$ in. It weighs 4 lb. (net).

The drill can be supplied with universal motors suitable for operation on 100-110, 110-130, 150-160, 200-220 and 220-250 V. d.c., and single-phase a.c. 25-60 cycles. Motors for 32 and 50 V. are available to special order. The finish is in polychromatic stove enamel.

Accessories for the KG2c drill include an optional side handle which screws into the gear case, right-angle drilling attachment, and a bench drill stand.

The price is £13 15s., and delivery can be made from stock. The manufacturer is Wolf Electric Tools Limited, Pioneer Works, Hanger Lane, London, W.5.

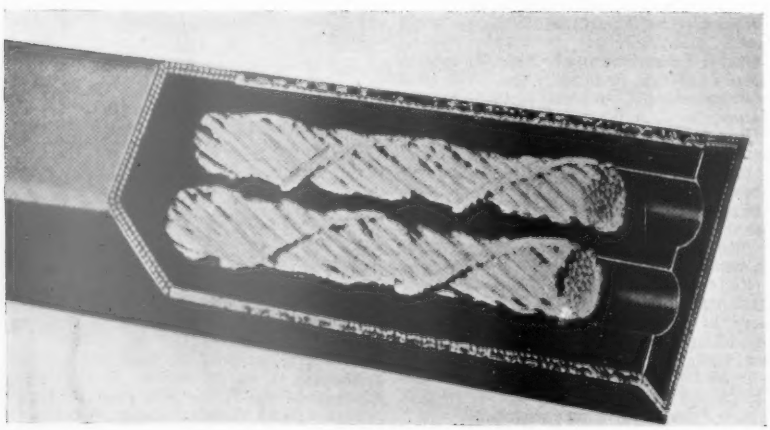
Improved V-belt Construction

A METHOD of construction of Texrope V-belts, which incorporates endless grommets, stated to give longer life and cooler running, has recently been introduced to this country, having previously been available in the U.S.A. V-belts are used, for example, for various auxiliary drives on diesel-electric locomotives, and the new method will provide, it is claimed, better service in exacting conditions, without increase in first cost.

Greater grip is obtained because the lateral flexibility of the Texrope Grommet belt enables it to settle into pulley grooves under load even though the top dishes, whereas, in conventional laminated V-belts this often reduces sidewall pressure of lateral stiffness.

The shrinkage of V-belts, caused by moisture absorption by cords, is stated to be minimised because the endless grommets are deep-set in solid rubber, protecting them against moisture penetration.

The method of construction, which can be seen in the cut-away illustration, also gives added strength to the V-belts, because the grommets are endless and without any weak section, and, with the grommets totally encased in rubber, belts are stated to have a greater capacity for absorbing the stress that occurs with jerking or shock-loading.



Texrope Grommet V-belts are at present available in C, D and E sections. Further details may be obtained from Frank Wigglesworth & Co. Ltd., Shipley, Yorks.

Portable Floodlighting Equipment

A PORTABLE floodlight of 10,000 mean reflected candle-power, the B.T.25, is designed for tunnel inspection, track repairs at night, and in other circumstances where no mains electricity is available; the floodlighting equipment operates on Propane or Butane gas.

It is fitted with a double texture shock-resisting mantle, armoured glass, and is of robust construction intended to withstand the roughest treatment in all weathers.

The floodlight is supplied with turntable base for the user's own mounting, and inlet-nozzle cock for ¼-in. bore flexible hose.

Dimensions of the lamp are: breadth 14½ in.; depth, 10 in. (without operating handle); height, 19½ in. (including bracket); dia. of reflector, 14 in.; and centre of reflector from base of turntable, 10 in. With bracket and turntable, the weight of the projector is 14½ lb. On a working pressure of 14 lb. per sq. in., the consumption of gas is 4·5 cu. ft. per hr.

A tripod, of special design, is also available for use with the lamp. It has three positions which give a height from ground to the centre of the mantle of 6 ft. 6 in., 11 ft. 4 in., and 16 ft. 6 in. The centre pin enters the ground some 2 ft. and the three legs act as steadying struts.

A bar for the purpose of rotating the lamp through 360 deg. is fitted after it has been raised to its maximum position. Retaining notches are arranged to keep the lamp facing the desired direction, and adjusting chains are fixed to the front and rear of the lamp to enable the user to

adjust the angle of the beam as required after the tripod has been elevated.

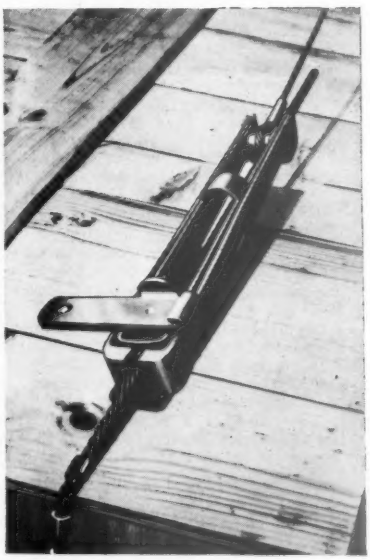
Full details may be obtained from the manufacturers, the Tilley Lamp Co. Ltd., 70-72, Jermyn Street, London, S.W.1.

Quickly Adjustable Securing Tackle

A CABLE assembly which enables loads to be quickly lashed and tightened, can be used for securing heavy loads such as door-to-door containers to railway wagons, road vehicles, and so on.

The P. & H. rapid adjustable cable assembly, protected by world patents, is a combination of two complementary devices which, used together, provide a rapid and positive tightening piece of equipment.

One component is a galvanised steel wire rope strop or bridle, on which are threaded loose "beads" or lengths of steel tube. These beads form a simple means of adjusting quickly the desired



length of the wire, by insertion of the rope into a slot in the end of the tensioner, which is the other component.

Two separate actions are thereby provided; adjustment of the length of wire, and a quick-action tensioning toggle to secure positively any load.

Advantages claimed over the common form of lashing with ropes and chains are that, being of quality weather-proof material, the equipment will not stretch or rot, that, weight for weight, it is much stronger and that the deterioration factor is almost negligible.

Once set, the tensioner is stated to be vibration proof, maintaining an even and constant tension until released. Loads can be made pilfer-proof by inserting a padlock in the locking bar of the tensioner.

Four sizes are at present available, giving working strains of from approximately 5 cwt. to 3 tons. The largest size can be supplied with the adjustable cable terminating in an extra tensioning device for taking up swiftly any slack caused by any movement or settling of the secured article. With the rapid-action tensioner, this device enables the operator to obtain bar tightness, and small adjustments can be made without disturbing the lashing, once the latter is in place.

Details can be obtained from the distributor in the United Kingdom and the European area, Furness Withy & Co. Ltd. (Stevedoring Department), Finland Yard, Surrey Commercial Docks, London, S.E.16.

Diesel Locomotive Hydrostatic Cooling System

THE Behr patent hydrostatic fan drive for diesel locomotive cooling systems is now being manufactured in this country. Known as the Serck-Behr hydrostatic fan drive, it is of application mainly for locomotive radiators, but may also be used for railcars.

A positive-displacement hydraulic pump is driven directly by the engine and its output fed into a positive-displacement hydraulic motor coupled to the fan. A valve fitted between the high and low pressure sides of the circuit can by-pass all or any proportion of the pump output. This valve is controlled by a thermostat in the radiator water circuit. An increase in temperature of the cooling water effects a restriction to flow across the by-pass thus speeding the drive motor and radiator fan.

The hydrostatic fan drive is claimed to have advantages over the conventional electric or mechanical drives. There is, for instance, no top-weight difficulty as frequently occurs with electric drive, caused by the high-mounted meter, or difficulty in obtaining infinite speed control to suit the cooling demand. Nor is the position of the radiator fixed by considerations of drive, as with mechanical transmission.

It is also possible to have shutters actuated by the same hydrostatic pressure to open at predetermined fan-speeds to ensure the minimum warming up period for the engine and also close off the radiator immediately on engine shutdown, or when running down a long gradient during winter conditions.

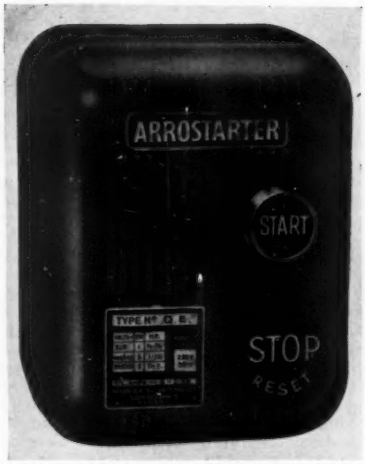
The use of the hydrostatic fan drive, it is stated, has stimulated the development of the cooling group. Until recently each component of the general cooling system, whether radiator, fan, fan-drive, thermostat or header tank, has tended to be considered separately, resulting in considerable pipework. The hydrostatic drive is suitable for incorporation in a complete cooling group in which all the components are condensed into a factory-built unit ready for installation, requiring the minimum of coupling to the engine part of the system.

Details may be obtained from the manufacturer, Serck Radiators Limited, Warwick Road, Birmingham, 11.

Direct-on-Line Starters

THE range of Arrostarter direct-on-line starters has been specially designed for use in workshops. The chief feature of these motor starters is that the overload is of the variable type and is adjustable on site by the engineer in charge of the plant to suit the precise motor current.

Complying with B.S. 587, they use a thermal bi-metal trip which has an efficient compensation for ambient temperature. Resetting can be manual or automatic, while there is an inherent no-voltage release. The contacts, which give



two breaks each phase, are immediately released from the well-proportioned contact carrier by depressing and turning the contact cap.

Other features include an easily removable interior, mushroom stop button, and knockouts at top, bottom, and back.

The unit measures $6\frac{1}{4}$ in. × $4\frac{7}{8}$ in. and the depth (excluding the protrusion of the button) is $4\frac{1}{4}$ in.; the case is of heavy gauge pressed steel.

The normal operating coil ranges, 50 cycles a.c., are 220-240 V. and 400-440 V., but coils for 110-115, 500-550, and other non-standard voltages can be supplied. On 230 V., one-phase, 400-440 V., three-phase, and 500-550 V., three-phase ranges, starters with h.p. ratings of up to $1\frac{1}{4}$, 5, and $6\frac{1}{4}$ respectively can be supplied.

Another application of these units could be for controlling a bank of lights where a degree of protection is required.

Details may be obtained from Arrow Electric Switches Limited, Hanger Lane, Ealing, London, W.5.

Synthetic Rubber Tile Flooring

A DEVELOPMENT of Hypalon synthetic rubber enables rubber tiling to withstand the effects of sunlight and weathering. Tiling made of this material is not only suitable for floor coverings for buffets, restaurant rooms, kitchens and so on, but can also be used for decorative flooring purposes.

In outdoor exposure tests, moisture and temperature fluctuations caused no significant change, either in expansion or contraction, because the material is resistant to oxidation by sunlight, and atmospheric ozone. Because Hypalon is a vulcanised rubber, and not a plastic, the tiles do not soften and spread in summer or become hard and brittle in winter.

Other advantages are in brightness and durability of colours, in ease of cleaning and polishing, in withstanding scuffing and scratching, and in resistance to staining by food and beverages. In addition, the tiles are stated to be considerably better in recovery from indentation and in resistance to degradation by chemicals.

Like all smooth flooring materials, the tiles tend to be slippery when wet, but the maker can provide a special patterned surface to overcome this difficulty.

Further details may be obtained from the distributors in the United Kingdom, Durham Raw Materials Limited, 1-4, Great Tower Street, London, E.C.3.

Ministry of Transport Accident Report

Ludlow, September 6, 1956: British Railways, Western Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred at about 3.20 a.m. at Ludlow, on September 6, 1956, when the 2 p.m. braked parcels train, Penzance to Crewe, consisting of 13 vehicles drawn by a mixed-traffic 2-6-0 engine, W.9306, fitted with the Western Region automatic train control apparatus, passed the distant signal at caution and two stop signals at danger and collided at about 40-50 m.p.h. with the 4.45 p.m. express, Penzance to Manchester, consisting of 12 vehicles drawn by 4-6-0 engine M.45644, stopped out of course in consequence of a lorry having collided with level crossing gates ahead, necessitating single line working being put in force.

The collision was a violent one and a good deal of damage was suffered by both trains. Fortunately the demolished last two vehicles of the stationary one were not passenger coaches and only two passengers of the 10 riding in the next required treatment for shock. Guard and fireman of the parcels train escaped with a shaking but the driver was injured and suffered severely from shock; he was unable to give evidence until November 12. Relief arrangements were promptly made and after transfer of mails and some minor repairs the front part of the passenger train was able to go forward at 6.25 a.m. Through working was restored on both lines early the following morning. The night was dark but fairly clear, with a moderate south-east wind. The accompanying diagram shows the lines, signals, etc., essential to an understanding of the case.

Condition of A.T.C. Apparatus

There was no difficulty in testing the A.T.C. equipment as the engine remained upright, with undamaged cab. It was found to be clean inside with ample current from the battery but the siren could not be made to sound. When this was dismantled later, in Colonel Reed's presence, a thread of cotton waste was found to have jammed the spinner. The engine shoe was found to have been in proper order and a correct bell signal should have been received when a clear distant signal was approached; there would, however, have been no warning siren with a signal at caution, although the brake would have been applied automatically as usual. (The engine equipment was nine days overdue for the regular 28 days examination.)

Condition of Signalling Equipment

Careful testing the following morning confirmed that there had been no fault in the signalling equipment. Special attention was given to the insulation of the A.T.C. ramp, to investigate the possibility of false energisation, and to the distant signal motor circuit, as well as the interlinking of that signal with the block and the control over the starting signal, also the ordinary interlocking, always with correct results.

Course of Events and Evidence

The gate collision at the level crossing beyond Bromfield, the box in advance of Ludlow, occurred at about 2 a.m., obstructing the up line. Single line working was soon put in force over the down, but some delay was caused and it was necessary to regulate up traffic to give passenger trains priority. The relief signalman doing duty at Ludlow, who had a porter training under him, shunted a freight train to give precedence to two expresses. (The driver of this train confirmed receiving the siren at the Ludlow distant, which he saw to be at caution and said weather was fine and clear.) The first of these expresses, for Cardiff, ran through under clear signals at 2.38.

Knowing it would be held at Bromfield, the signalman arranged to stop the Penzance-Manchester train, accepted at 2.43. The porter under training dealt correctly with the signalling operations and the train stopped with the rear van very near the box. Its guard came and signed the register but did not verify, as he should have done, that collars had been applied to levers 2 and 3. Both he and the signalman were positive that all levers were normal after this train arrived. (The signals protecting it would then be locked by track circuit, as shown on the plan.) The porter, again under supervision, accepted the parcels train at 3.10; there was the requisite clearance for that beyond the home signal. Seeing the track in advance of it become occupied, the signalman thought the driver had overrun the signal and would set back, but collected detonators and a hand lamp and then saw the train coming past the platform. He ran towards it waving the lamp. It passed with no sound of braking and no whistle acknowledgment of his hand signal. He thought the engine was steaming and speed about the usual 50 m.p.h.

The guard of the standing train walked to the front and the fireman, sent back by his driver, was near the box when he saw the other one approaching at normal speed, steaming hard.

The driver of the latter, a man of 62, said he rested well the day before and was in good health. He had worked the engine the previous day and reported it for poor steaming but considered it otherwise satisfactory. An injector pipe joint was still leaking, allowing steam to obscure his view, and steaming performance had not been improved. The A.T.C. appeared to work perfectly and the driver he relieved had no complaints; he himself had every confidence in it. He said there was a thick autumn fog approaching Ludlow. His brakes were working well. Normally he rested his right hand on the cab frame, not the A.T.C. apparatus, and did not carry waste in it, although he had some in his pocket. He did not rely on the fireman looking for signals, even when they were difficult to see, and stepped across the footplate when necessary. The fireman was busy with the fire on this occasion.

The driver said he received a clear bell at Ludlow distant and, stepping across, saw it to be showing green as he passed, but did not see the home signal; he was satisfied it must have been at clear having received the bell. He saw the intermediate home when half way down the platform and then the tail lamp ahead. He thought he had reduced speed by half before the impact. He saw no lamp waved. He was surprised when told the intermediate home was 369 yd. from the box and had he seen it shortly after coming out of the tunnel, 145 yd. away, would have had 400 yd. of braking distance.

The fireman stated that he heard the bell once after the station in rear, he thought for the Ludlow distant, but became uncertain when asked whether it might not have been for a level crossing distant earlier. He could not say whether the driver had moved across the cab, but he could have done so while coal was being pulled down. He had no warning of the accident.

The guard thought the train was running at normal speed and only saw the inner

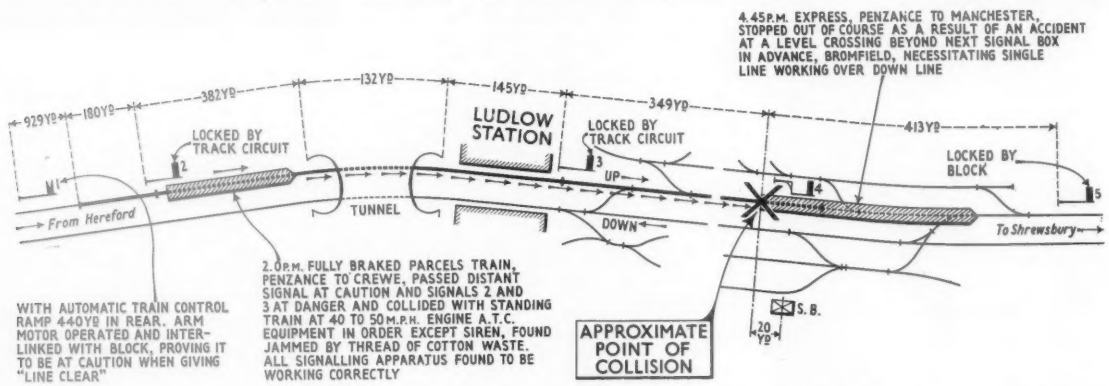

4.45P.M. EXPRESS, PENZANCE TO MANCHESTER, STOPPED OUT OF COURSE AS A RESULT OF AN ACCIDENT AT A LEVEL CROSSING BEYOND NEXT SIGNAL BOX IN ADVANCE, BROMFIELD, NECESSITATING SINGLE LINE WORKING OVER DOWN LINE
929YD
180YD
382YD
132YD
145YD
349YD
413YD
LOCKED BY TRACK CIRCUIT
LUDLOW STATION
LOCKED BY TRACK CIRCUIT
LOCKED BY BLOCK
UP
DOWN
TUNNEL
From Hereford
To Shrewsbury
WITH AUTOMATIC TRAIN CONTROL RAMP 440YD IN REAR. ARM MOTOR OPERATED AND INTERLINKED WITH BLOCK, PROVING IT TO BE AT CAUTION WHEN GIVING "LINE CLEAR"
2.0P.M. FULLY BRAKED PARCELS TRAIN, PENZANCE TO CREWE, PASSED DISTANT SIGNAL AT CAUTION AND SIGNALS 2 AND 3 AT DANGER AND COLLIDED WITH STANDING TRAIN AT 40 TO 50M.P.H. ENGINE A.T.C. EQUIPMENT IN ORDER EXCEPT SIREN, FOUND JAMMED BY THREAD OF COTTON WASTE. ALL SIGNALLING APPARATUS FOUND TO BE WORKING CORRECTLY
APPROXIMATE POINT OF COLLISION
S.B.
20 YD

Diagram showing circumstances of accident at Ludlow, British Railways, Western Region, on September 6, 1956

home at danger a moment before the impact.

The inspector responsible for the maintenance of the A.T.C. throughout the Western Region said the period between examinations, done by specially trained electricians, controlled directly from the Motive Power Superintendent's headquarters at Swindon, was four weeks. He described the tests after the accident and said that when the siren failed to sound he left it unopened until Colonel Reed could be present.

Inspecting Officer's Conclusions

Colonel Reed is unable to reconcile the driver's statements on certain points with other evidence. The results of the collision indicate speed to have been fairly high. The driver admitted to not seeing the intermediate home signal at danger until half way along the platform, but it can be seen clearly before an engine emerges from the tunnel. General opinion was that it was a clear, not a foggy night, and the driver who passed 30 min. earlier found the tunnel clear. With the wind blowing as it was any smoke left by his engine should have been cleared in a very few minutes. If action had been taken when the intermediate home came in view there would have been 500 yd. in which to brake and, with such a well-braked train the collision might have been avoided. Had the brake been applied when the driver said it was the impact certainly would have been much less. Had he been alert he should not have overlooked the red hand lamp. Admittedly he made no effort to see the home signal and did not ask the fireman to look at it.

The distant signal could not have been at clear, with the controls provided, unless there was some fault in the equipment. None was found in the motor operation of the signal, which was working correctly before and continued to do after the accident, without attention; nor were there traces of any fault that could have produced false energisation of the A.T.C. ramp. It is reasonably certain that the thread of waste was jamming the siren spindle when the dead ramp was passed and the warning here failed to sound for the first time. The spindle is small, light and finely machined and might well have become jammed almost at once and made no noise, although there would be the subdued sound of the rush of air. The thread might have been left, adhering to the casing previously and been sucked in on this occasion or drawn in from a piece of waste in the driver's hand.

In view of the inaccuracies in his evidence Colonel Reed does not accept the driver's statement that he heard the bell and saw the distant signal light to be green, with so much evidence to the contrary, and is satisfied that all signals were against the parcels train. He can only suppose the driver to have been not properly alert and, although not receiving the siren whistle, to have involuntarily operated the cancelling lever without realising what he was doing; he then failed to take action in time. Failure of the siren may have contributed to the accident in that its noise might have brought the driver to his senses, but there was no excuse for his admitted failure to look out for the home signal. It was the fireman's duty to look for signals when not otherwise occupied, but his statement that he was busy is accepted.

Remarks

The accident took place at an hour when vitality is at its ebb, which may have led to the driver's lack of concentration. He may have been lulled to some extent, through his long knowledge of the working over the line, by expectation of a clear run through Ludlow as usual. Whether he realised the situation before the collision is by no means certain, but he was severely shocked, which may have caused him to recollect what he thought must have happened rather than what actually occurred. The fact that the engine apparatus was overdue for examination is hardly relevant, since it was clean and in perfect order except for the thread; a failure from this cause could have happened at any time after an examination if conditions had been suitable. Nevertheless the excessive period between examination, due partly to transfer of the engine to another shed, was regarded as unsatisfactory by the Motive Power Superintendent, who has taken suitable action.

Cases of entry of cotton waste into sirens are infrequent but, as a routine modification, covers to prevent entry of foreign matter have been fitted to one third of the 3,000 engines which have this A.T.C. The programme has been accelerated and should be completed before the end of the year. An additional measure, which should be of value, would be to provide engine cloths instead of cotton waste.

The Great Western type of A.T.C. has a long established reputation for reliability and has played an important part in maintaining the excellent safety record of that railway, continued in the Western Region. It is, however, like the modern, recently-approved British Railways type, designed to reinforce the driver's vigilance and not be a substitute for it. Drivers are normally quick to detect such occasional failures as do occur and the general value of the system and its reputation are not impaired. The fitting of covers should improve still further the reliability of this simple and robust form of A.T.C.

Mechanised Ticket Issue Experiments

Western Region to install modern apparatus at selected stations

The Western Region of British Railways is shortly to conduct experiments at Chippenham, Caerphilly, and other selected stations with the mechanisation of the issue of tickets in the busier booking offices.

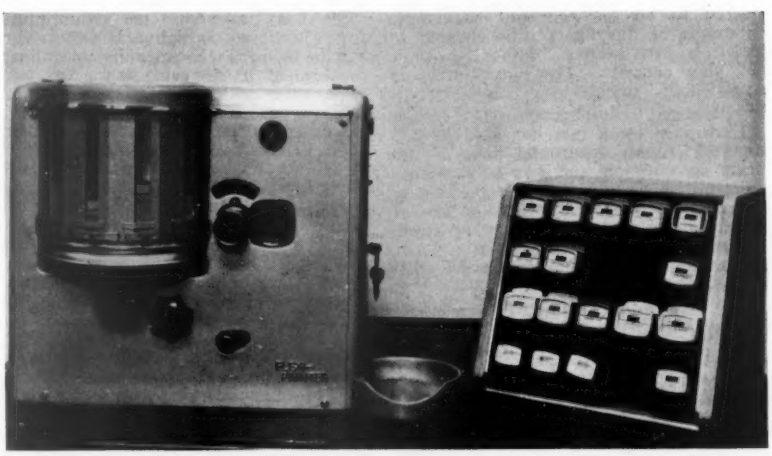
As long ago as 1911, the former Great Western Railway pioneered tests in this country of machines capable of printing and issuing tickets and at the same time producing an audit roll. Two appliances were installed at Birmingham Snow Hill, but the experiment, although partially successful, was not pursued at the time as the passenger fares structure and booking arrangements did not readily lend themselves to mechanisation with the earlier types of machine. During recent years, however, much thought has been given to the subject, resulting in many improvements, and the experiments may lead to a staged mechanisation of the busier booking offices throughout the country.

For some time many Continental railway undertakings have been using machines developed from those tested at Birmingham in 1911. The modern machines, in addition to printing and issuing tickets, are capable of performing a wide range of accounting and statistical work.

The machines, known as the Multiprinter and the Flexiprinter, now being marketed by Westinghouse Garrard Ticket Machines Limited, have been selected as being the most suitable in all respects for use in this country. They are of German design and manufacture but are sold in this country under reciprocal arrangements by which other types of British-made ticket issuing machines are supplied to Germany.

The Western Region is likely to be early in the field in securing experience of both these machines under present-day conditions, as a Multiprinter is being installed at Chippenham within the next few weeks, and a Flexiprinter is being provided at Caerphilly. Towards the end of this year the Western Region expects to be in a position to assess the possibilities of extending the use of the machines.

The Multiprinter is designed to print, issue, and account for tickets. The printing plates, 1,260 on the "Major" machine and 630 on the "Minor," are sealed



A "Flexiprinter" of the type to be installed at Caerphilly. Print blocks are stored in the rack on the right

within a cabinet, on top of which a movable printing carriage is placed. At the rear of the machine an index panel indicates the range of the plates, with destination, routes, and, if desired, fares shown against each plate. To select a plate the operator moves the printing carriage which in turn actuates a cursor on the index panel; when the cursor is on the desired indicator stud, he inserts a blank ticket of appropriate colour, which is mechanically drawn into the machine. The printed ticket is returned at the same point almost instantaneously. As each ticket is issued, details of the transaction, in coded form, are printed on a moving audit roll which is visible but not accessible to the operator. Details shown are plate number, progressive number, and the fare.

At any time the cumulative total of the debit within the machine can be ascertained by setting the cursor to a "control" position and inserting a blank "control" ticket, upon which can be printed the total debit. Additionally, each issue is recorded on statistical dissector counters, one for each plate, at the lower front of the Multiprinter and by means of a special device details of the numbers of tickets issued to each destination can be ascertained at any time, the operation taking only a few minutes.

The "Minor" machine is 3 ft. 6 in. long and the "Major" 5 ft. Both machines are 2 ft. 6 in. wide and about 4 ft. 3 in. high. Normally electrically assisted, they can be operated manually with slight loss in speed of issue in event of a power failure. When working properly, the overall speed of issue is expected to be about the same as with present methods. The Multiprinter cannot print season tickets. The main advantages are the automatic recording and totalling of debits, which obviate all existing daily accountancy.

The Flexiprinter works on similar principles and provides similar facilities for recording and totalling debits. Printing plates are not incorporated in this machine but are stored separately in sealed "print blocks" which are inserted into the Flexiprinter as required. Blank tickets of appropriate colours are held in a revolving drum in the machine. The speed of issue is faster than that of the Multiprinter, and of existing methods.

There is no limit to the number of print blocks but about 300 blocks are considered to be the economic maximum. In excess of this figure it is cheaper to install a Multiprinter "Minor" with a 630 plate capacity. The Flexiprinter can issue both season and ordinary-type tickets.

Each print block face indicates the destination, route, type, and fare of the ticket in question and has a numerical indicator which advances one position as a ticket is printed. The machine can be manually operated in the event of power failure. It is only 19½ in. × 14 in. × 17 in. in size and can be placed on ticket office counters.

The installation of these two machines in large numbers would obviate centralised ticket printing and the ordering and checking of printed stock as now performed.

The Western Region test "Major" should be operative at Chippenham in the near future and the first Flexiprinter on British Railways should be working at Caerphilly by September next.

These machines were described fully in our issue of January 6, 1956.

Re-arranged Track Layout at South Kensington

The re-arranged track layout between South Kensington and Gloucester Road stations on the London Transport line comes into use this weekend. Work began on the project in August, 1956; it incorporates, in addition to the trackwork, the modernisation of signalling in the area, and the provision of a centralised signalling control system at Cromwell Road signalbox.

The objects of the new track layout are to eliminate a source of delay at this point to both eastbound and westbound District Line services, and to afford combined platform facilities for eastbound District and Circle Line passengers at South Kensington and Gloucester Road.

This object has been achieved by removing the flat crossing east of South Kensington station—whereby eastbound District Line trains cross over the westbound (Outer Rail) Circle track—to a new site west of Gloucester Road station, and reversing the direction of running of the two inner of the four tracks, together with appropriate changes in the junction layouts.

Delays Eliminated

In future it will be possible for a westbound Circle train waiting to cross the eastbound District Line track to be held in Gloucester Road station without delay to following westbound District Line trains, which will now have an independent track from a point east of South Kensington station.

So far as the new platform facilities are concerned, eastbound passengers from Gloucester Road and South Kensington stations will now find all eastbound trains leaving from the same platform.

As the existing signalbox at the east end of South Kensington station cannot be dispensed with until the new signalling installation comes into effect this weekend, the tracks at this point are not yet on their final alignment and certain crossover facilities are not yet available pending demolition of this box. This work will be completed, during the next few weeks, without interference to traffic.

J. Stone & Co. (Holdings) Ltd.

In his circulated statement, Mr. Kenneth Preston, Chairman, J. Stone & Co. (Holdings), Ltd., states that the group profits for 1956 are not as high as in recent years, but the board is recommending an ordinary dividend of 16 per cent, as for last year. A distribution to ordinary and "A" ordinary stockholders of 2 per cent from exceptional capital profits is also being made. Output of J. Stone & Co. (Deptford) Ltd. was limited by difficulties in recruiting the additional labour required.

The value of orders placed during the year under review was higher than in 1955 and is continuing at a satisfactory and increasing level. Sales of the Stone-Vapor steam generator have developed in a very satisfactory manner, not only in the railway and marine fields, but also for a wide range of industrial uses. Prospects for the Mekydro hydraulic power transmissions are also encouraging. During the year manufacturing and selling rights have also been acquired from Etablissements L. Faiveley Société Anonyme for its pantographs and other accessories for electrified railway rolling stock. Sales of trainlighting and air conditioning equipments throughout the world have been well maintained against increasing world competition, a notable example being the supply to India of the complete auxiliary power plant, air conditioning, and lighting equipment for four air-conditioned high-speed composite trains, the first of which went into service in October and which have gained wide publicity.

The company has also been successful in obtaining orders for the lighting, heating, and air conditioning installations, with appropriate power, for the British Railways inter-city Pullman diesel trains. They will be the first fully air-conditioned trains to operate in the United Kingdom.

Staff and Labour Matters

Provincial Bus Strike

The strike of provincial busmen which commenced on July 20 caused widespread disruption of provincial bus services throughout the country.

The Ministry of Labour, in an effort to end the strike, has referred the dispute to the Industrial Disputes Tribunal, which commenced its hearing on July 24. The members of the Tribunal are Lord Terrington, Chairman, with two independent members, Sir Patrick Branigan, Q.C., and Professor A. S. Shimmin, and Brigadier L. C. Mandleberg from the employers' panel, with Mr. J. Kitts from the unions' panel.

It is expected that the Tribunal report will be in the hands of the parties by the weekend, but hopes of a settlement are not too promising because the six unions involved, of which the Transport & General Workers' Union has by far the majority of members concerned, decided not to give evidence before the Tribunal.

Parliamentary Notes

Carriage Cleaning Noise and Smoke

The noise, smoke, and smells from a British Railways carriage cleaning plant were the subject of a short debate in the House of Commons on July 19, initiated by Mr. R. S. Russell (Wembley S.—C.). This plant is alongside the London Midland Region main line out of Euston, just north of Stonebridge Park station.

Mr. Russell said the plant was on top of an embankment, and the noise was therefore helped to travel more easily over a wider area. Shunting engines hauled long trains at a very slow pace uphill towards the plant with constant exhaust noise and hissing steam. The smoke seemed to leave a smell over the area and there was also steam issuing from a laundry plant. There was a loudspeaker system in operation. If it was found impossible to reduce noise very considerably from diesel engines, would it be possible to extend the electrification when that took place on the main line? Another anxiety to some people was that they thought there was a cesspool nearby into which train lavatories were emptied.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, said the Wembley carriage-cleaning depot was completed in 1953. It was planned and begun before the war, and so did not then require the planning consent necessary today. The depot replaced several depots which had existed before then in the Willesden area, and he himself was very impressed by the whole layout and the ingenuity and skill with which it had been done. He had no doubt that as fast

as possible the Commission would be installing plants like this at different key-points all over the country.

It was the Commission intention eventually to replace steam locomotives with electric locomotives, but meantime it was the problem of the Commission to make available medium-sized diesel engines which might do the job, but they would hardly be heavy and fast enough to pull empty trains from the terminus up the main line. The Region hoped to make a report in the course of the next few months on whether it can replace the steam engines with diesels. In the meantime, the staff had been instructed to keep noise to a minimum.

It might be possible to reduce the loud-speaker noise at night. Whatever was done to a railway it would always be a noisy place. There was actually very little soil refuse to be discharged from these trains near the depot, and any food-stuffs on the trains were discharged into an incinerator.

Questions in Parliament

B.T.C. Purchasing Arrangements

Mr. E. Partridge (Battersea S.—C.) asked the Minister of Transport & Civil Aviation on July 17 whether he had yet been able to look into the purchasing arrangements of the B.T.C. in accordance with his recent undertaking.

Mr. Harold Watkinson, in a written reply: In the first instance, I have asked the Chairman of the B.T.C. as a matter of urgency to provide me with a full and detailed report of the allegations made. He has told me that he welcomes an opportunity to put his case to me, and will see that the report is in by hands at the earliest possible moment.

Airport Terminal

Mr. R. S. Russell (Wembley S.—C.) asked the Minister of Transport & Civil Aviation on July 17, in view of the successful building of a London terminal for British European Airways over the underground railway off Cromwell Road, if he would have a survey made to find out where else in the London area either main line or underground railways could be built over in this way.

Mr. Airey Neave, Parliamentary Secretary: Because of the high cost of construction and the limited number of suitable sites, this matter does not lend itself to general treatment. It is for the B.T.C. to consider the possibilities of individual sites with would-be developers.

Mr. Russell asked whether a large number of sites on the railways leading out of London could not be used, if not for buildings, for car parks?

Mr. Neave: The B.T.C. is certainly prepared to consider leasing sites of this kind on commercial terms for development of car parks, and is in touch with the organisations likely to be interested.

PAXMAN-POWERED DIESEL-HYDRAULIC LOCOMOTIVE OPERATION IN INDIA.—The 20 Bo-Bo diesel-hydraulic locomotives operating on the metre-gauge Kandla-Deesa line of the Western Railway of India have now accumulated more than 1,500,000 miles. These units are fitted with 7-in. bore, 510-b.h.p. Paxman diesel engines.

Contracts and Tenders

Large diesel locomotive orders for South African Railways

South African Railways & Harbours have placed an order for 45, 1,200 h.p. main-line diesel-electric locomotives with the International General Electric Company of Erie, Pennsylvania.

South African Railways have placed an order for seven diesel-hydraulic locomotives with Henschel & Sohn G.m.b.H., Kassel, to the value of £475,650.

Klöckner-Humboldt-Deutz A.G. has received from the Westfälisches Landeseisenbahn an order for two 75-ton 1,600-b.h.p. diesel-hydraulic B-B locomotives intended specifically for freight train haulage.

Maschinenfabrik Esslingen has received from the Piraeus-Athens-Peloponnessus Railway an order for seven metre-gauge diesel-hydraulic three-car trains, each train to be equipped with two Daimler-Benz 500-b.h.p. engines and Voith T.24r transmission. The whole order includes an additional seven trailers, so that the train formation can be made up to four coaches if desired.

Maschinenfabrik Esslingen has received from the Iraqi Railways an order for 50 low-sided two-axle standard-gauge freight wagons.

The Eastern Railway, India, has placed orders with a Calcutta firm for 300 metre gauge third class coaches, and with a Bombay firm, which has recently commenced the manufacture of railway rolling stock, for 250 narrow gauge wagons. The orders are part of a drive by the Indian Railways to develop indigenous manufacturing capacity for railway equipment to a maximum.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Australia for electric train equipment as follows:—

(*a*) 90 electrical control equipments for motor coaches
(*b*) 120 electrical control equipments for trailer coaches
(*c*) 90 fluorescent lighting control equipments for motor coaches
(*d*) 120 fluorescent lighting control equipments for trailer coaches
(*e*) 90 pantographs
(*f*) 360 traction motors and gearings
(*g*) electro-pneumatic brake equipment, standard self-lapping type, complete for 90 motor coaches
(*h*) electro-pneumatic brake equipment, standard self-lapping type, complete for 120 trailer coaches
(*i*) spare parts for items (*a*) to (*h*) inclusive as may be ordered by the Corporation
(*j*) supervision of the installation of equipment

The issuing authority is the Victorian Railways. The tender No. is 61,137. Bids should be sent to the Secretary for the Victorian Railways, Railways Administration Office, Melbourne, C.1. The closing date is September 25, 1957. A copy of the tender documents, including specification but not drawings, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/16894/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for a quantity of over-riding curved switches, full details of which may be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

The issuing authority is the Director General of Supplies and Disposals. The tender No. is WPI/18998-G/I. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is August 9, 1957. A set of tender documents but not specifications and drawings is available for loan to United Kingdom firms on application. A photo-copy set can be purchased from the Branch for 16s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/17286/57 should be quoted in any correspondence with the Branch.

The Commissioners for the Port of Calcutta invites tenders for broad gauge diesel-hydraulic shunting type locomotives with spares. See Official Notices on page 116.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for disc wheels as follows:—

160 disc wheels, solid steel, for tenders of AWC engines to S.I.Rly. Drg. No. AWC/21/2 dated nil. No. 5369 and to I.R.S. Specn. No. R.19/53.

The issuing authority is the Director General of Supplies and Disposals. The tender No. is SRIA/16065-H/I. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is July 30, 1957. A set of tender documents and drawings are available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/17619/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from South Africa for locomotive lubricators as follows:—

550 lubricators, four feed, drgs. L.9113/2 and L.10682/5.
100 lubricators, five feed, control valve three position, drawing CME.102/13-A07.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. H.6032: Locomotive Lubricators," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is August 16, 1957. A copy of the tender documents excluding drawings is available for loan to United Kingdom firms on application to the Branch. A photo-copy set can be purchased from the Branch for 8s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade.

Notes and News

Institute of Transport Week-end Course at Ashridge.—The week-end course that has been arranged by Ashridge in conjunction with the Institute of Transport will be held from Friday evening, September 13, to Monday (breakfast), September 16, and not from July 12 to July 15, as incorrectly stated in our issue of July 5.

Train Over-runs at Euston.—The 7.13 a.m. passenger train from Bletchley over-ran when entering Euston station, London Midland Region, on July 22 and collided with one of a number of vans which were being loaded with mail. Some 20 people were injured, but most of the injuries were slight. One van was wrecked and the buffer stops were damaged.

E.A.R. & H. District Engineers' Annual Conference.—The accompanying illustration shows those who attended the recent annual conference of East African Railways & Harbours District Engineers at Nairobi; it is of added interest as including Sir Arthur Kirby, General Manager of E.A.R. & H., before his retirement. The names are (left to right):

Back row: Messrs. G. Green, Establishment Officer, Headquarters; C. W. Pugh, Research & Development Engineer, Headquarters; L. F. Mulligan, District Engineer, Headquarters; R. T. Webb, Resident Engineer Nairobi/Embakasi Realignment, Headquarters; L. J. Godfrey, Signal Engineer, Headquarters; V. S. Ghersie, Acting District Engineer, Tanga: N. H. Cour-Palais, Permanent Way Engineer, Headquarters; T. G. Lovering, Estate & Rating Surveyor, Headquarters; D. C. Maxwell, Administrative Assistant, Headquarters; E. J. A. Kane, Contract Officer and Chief Quantity Surveyor, Headquarters.

Centre Row: Messrs. S. J. Kingswell, Officer-in-Charge, Southern Province Railway & Port, Headquarters; G. A. Slater, Signal Engineer, Headquarters; W. H. B. Mitchell, District Engineer, Headquarters; R. M. Dewar, Plant & Workshops Engineer, Headquarters; W. P. A. Fraser, Senior Assistant Architect, Headquarters; E. H. V. Walter, Land Planner, Headquarters; A. F. Bellman, District Engineer, Dodoma; C. J. R. Cobbett, Acting District Engineer, Tabora; W. R. McNeice, Acting Engineering Accountant, Headquarters; C. J. Crowe, Architect, Headquarters.

Front Row: Messrs. J. G. Jackson, District Engineer, Headquarters; L. G. Dormon, District Engineer, Headquarters; H. C. Murrell, District Engineer, Nairobi; R. L. Rolph, Assistant Chief Engineer, Administration; C. T. Henfrey, Chief Engineer; Sir Arthur Kirby; Messrs. P. H. Hicks, Assistant Chief Engineer Construction, Headquarters; C. G. H. Rodgers, Planning Engineer, Headquarters; J. Hogan, Design Engineer, Headquarters; W. B. Cannings, District Engineer, Mombasa; C. J. Railton, District Engineer, Nakuru.

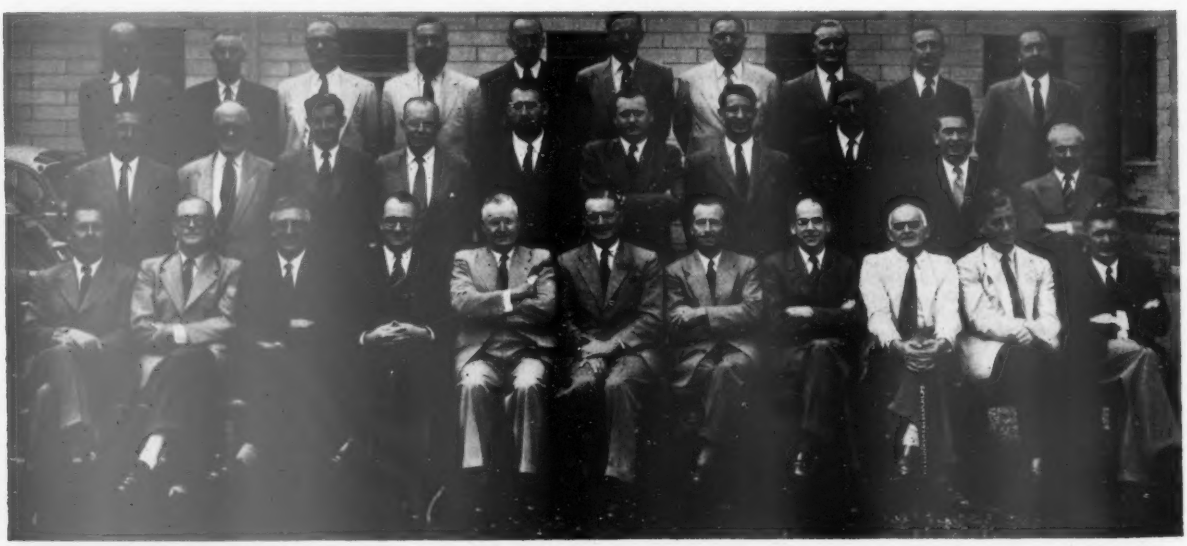
Belfast-Enniskillen Diesel Express Service.—The Great Northern Railway Board on July 22 introduced a fast diesel railcar service between Belfast Great Victoria Street and Enniskillen via Omagh, performing the journey in 2¼ hr. The new express, which is second class only, leaves Enniskillen on weekdays at 8.50 a.m. and, calling only at Bundoran Junction to give a connection out of the 7.25 ex Bundoran, reaches Belfast at 11.20; the return train leaves Belfast at 7 p.m., calls at Omagh, and arrives at Enniskillen at 9.25. Day travellers from Enniskillen have over 7½ hr. in Belfast.

L.M.R. Train Services for International Jamboree.—More than 50 special trains will be run on July 29-31 to take Boy Scouts to the International Jamboree at Sutton Park, near Birmingham. The scouts, from 60 different countries, will be travelling from London airport, principal seaports, and all parts of the United Kingdom. Some 135 excursion trains from all parts of the country have been arranged during the period of the Jamboree, August 1-12, to take visitors to Sutton Park, Sutton Coldfield, and Streetly. A further 97 trains will take scouts from the Jamboree to places of interest including London, Oxford, Windsor, Stratford, North Wales, and so on, and the railway works at Crewe. To facilitate working, the London Midland Region has installed temporary signalboxes at Streetly and Penns, and a special railway office at the Jamboree has been linked to the London Midland Region teleprinter network so that rapid arrangements can be made for the scouts' travel requirements through District offices in all parts of the Region. One of the first special trains will leave St. Pancras at 10.35 a.m. on August 1 for the official opening of the Jamboree. This train will be hauled by locomotive No. 70045 recently named *Lord Rowallan* by Lord Rowallan, the Chief Scout. Normal services on the Birmingham - Sutton Coldfield - Lichfield line and the Birmingham - Walsall line via Castle Bromwich will be specially augmented during the period.

Railway Benevolent Institution.—At a meeting on July 16 the Board of the Railway Benevolent Institution granted annuities to five widows and five members involving an additional liability of £218 per annum; 77 gratuities were also granted amounting to £745 to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of June amounted to £972.

City of London College: Classes in Transport Subjects.—The City of London College, Moorgate, E.C.2, is holding an evening course on transport subjects, commencing on September 23, to prepare students wishing to sit for the examinations of the Institute of Transport at the graduateship and associate membership stages. Other students interested in transport, but who do not wish to take the examinations, will also be welcomed. Lectures are given weekly, and enrolment can be made on September 16 (last session's students only), September 17. between 5 and 7.30 p.m. and on September 18 between 5 and 7 p.m.

British Oxygen Developments.—Members of the technical Press visited the Technical Service Department, Cricklewood, of British Oxygen Gases Limited, on July 19, to see a film preview and a demonstration of three processes which have been developed by the company. The film, in colour, deals with the flame cleaning process which, apart from other applications, is used by a number of locomotive constructors for removing mill-scale and rust from main frame plates and similar com-



Group taken at the E.A.R. & H. District Engineers annual conference at Nairobi

ponents, to prepare the surfaces for painting. The three processes are for the speedy cutting of aluminium plates, maintaining a constant arc when welding components with varying contours, and a development of Argonarc spot welding.

Transport Tribunal Hearing Concluded.—The Transport Tribunal concluded on July 17 its hearing of the British Transport Commission application to increase certain British Railways and London Transport fares. The tribunal will make known its findings in due course. The hearing lasted seven days.

Newsholme Station to be closed.—The London Midland Region has announced that Newsholme station, between Hellifield and Chatburn, is to be closed from August 6. Passengers will travel to Gisburn by bus routes operated by the Ribble Motor Services Limited. Parcels and passenger train merchandise will be dealt with at Gisburn and alternative arrangements will be made for freight and coal traffic.

Award to Injured Shunter.—A 51-year-old railway shunter was awarded £10,898 in damages, with costs, in the Queen's Bench Division on July 22 against the British Transport Commission in respect of injuries received when he was knocked from the steps of a locomotive by a point lever. The shunter had to have both legs amputated below the knee and also received injuries to the spine which affected the use of his right arm.

Bus Strike Developments.—The dispute about the pay of provincial busmen, which led to a strike of some 100,000 employees concerned from midnight on July 19-20, was being heard before the Industrial Disputes Tribunal as we went to press. The Tribunal was expected to make its report available by this weekend, but as the six trade unions concerned, of which the Transport & General Workers' Union has the greatest number of members involved, had decided not to give evidence, it is unlikely that the Tribunal award will be the basis of a direct settlement. It will, however, enable the Minister of Labour to make a fresh approach to the unions and the members of the Conference of Omnibus Companies. The Ministry of Transport & Civil Aviation has given special guidance on insurance matters to motorists who wish to give free lifts during the dispute.

B.T.C. Film Successes.—A film produced by the British Transport Commission, "Four Back Rooms," has been selected for screening at the annual meeting of the British Association for the Advancement of Science, in Dublin next month. The film gives examples of the work of B.T.C. scientists in carrying out research tests for different forms of transport. It lasts about 15 min. "Four Back Rooms" shows how research has assisted in the design of railway tracks by revealing metal fatigue; in the calming of the sea at harbour entrances by the fitting of underwater air jets, thus making docking easier; in discovering how silt in river beds can be traced and obviated; and how, by the use of an electrical instrument, changes in the metal structure of mechanical components of buses under service conditions can be measured. Another B.T.C. film, "Men on the Mend," which runs for 13 min., has been awarded second prize in the category of popular medical films at the International Congress of Occupational Health, in Helsinki. The film deals with a rehabilitation workshop in Swindon, where railwaymen who have suffered injury, either at work or elsewhere, are able by the use of specially adapted machines to exercise injured limbs back into fitness.

B.E.T. Offers Road Transport Prize.—A special annual prize of 12 guineas is offered by the British Electric Traction Co. Ltd. to be awarded to the candidate who, being an employee of a road passenger transport company in England or Wales, obtains at the examinations of the Royal Society of Arts, within three consecutive years, the highest aggregate of marks for the Diploma in Road Transport.

Nice-Paris Night Express Derailed Near Avignon.—In the early hours of the morning of July 19, the night express from Nice to Paris was derailed at Bollene la Croisière, 25 miles north of Avignon: more than 20 people lost their lives and some 80 were injured. Many of the casualties were caused by steam and occurred in a coach which came to rest alongside the locomotive. The train seems to have jumped the points which were set to divert it from the main line to allow the "Blue Train," which was following, to overtake. In a statement on Sunday, M. Armand, President of the French National Railways, who, together with the Minister of Transport, had visited the scene of the accident, stated that the high number of casualties was the result of the smokebox of the locomotive having been pierced by a rail. The steam was forced out through the hole into the coach which, by a second unfortunate coincidence, was exactly opposite.

Royal Visit to York.—The accompanying illustration shows Mr. T. H. Summerson, Chairman of the North Eastern Area Board, being presented to the Queen at York Station on the occasion of her recent visit to the city. Also depicted are (left to right): The Duke of Edinburgh: the Recorder of York, Mr. P. Stanley Price, Q.C.; the Sheriff of York, Councillor S. Palphramand; the Lord Mayor, Alderman E. L. Keld; Mr. H. A. Short, General Manager, British Railways, North Eastern Region; and Mr. R. W. Clampitt, Stationmaster, York.

Telford Exhibition.—To mark the bicentenary of the birth of Thomas Telford, in August, 1757, an exhibition of paintings, prints, drawings, and photographs has been arranged by the Institution of Civil Engineers, of which he was the first President. The opening ceremony was performed on July 22 by Lord Mills, Minister of Power. The public will be admitted free of charge to the exhibition at the Institution of Civil Engineers, Great George Street, London, S.W.1, until August 10, from 10 a.m. till 8 p.m. daily, including Sundays.

Call for Railway Contracts Inquiry.—A public inquiry into the purchasing policy of the British Transport Commission was called for on July 20 by Mr. Philip Goodhart, Conservative M.P. for Beckenham, Kent. He was commenting on a report prepared by Mr. E. L. Gethin, formerly Supplies & Production Adviser to the Commission. Mr. Goodhart stated that he had read the report and was sending a copy to Mr. Harold Watkinson, Minister of Transport & Civil Aviation. He was startled, he said, by what he had seen and the mass of supporting evidence. A public inquiry should be held without delay and Mr. Gethin should be called as a witness.

Guest, Keen & Nettlefolds Limited.—The annual meeting of Guest, Keen & Nettlefolds Limited was held in Birmingham on June 27. In his circulated statement, Mr. K. S. Peacock, Chairman & Managing Director, stated that capital expenditure sanctioned by the board and outstanding at the end of the year was £30,300,000. The board considers that it is essential to maintain the continuing modernisation and development of all the company's concerns, and in accordance with this policy £11,570,000 was expended on capital account during 1956, and it is expected that this rate of expenditure will not lessen over the next three to four years. The directors propose to raise some £16 millions of new capital. It is intended

Mr. T. H. Summerson being presented to the Queen during her recent visit to York

that an offer will be made to ordinary stockholders giving them the right to subscribe for ordinary shares at an appropriate price in the proportion of three new ordinary shares for every 10 units of stock held. This will involve an issue of 6,941,337 ordinary shares which will be immediately converted into stock. A final ordinary dividend of 10 per cent was recommended, making a total of 13½ per cent for the year, an increase of 1½ per cent. The report and accounts were adopted and the dividend approved. A resolution was also passed increasing the capital of the company to £50,000,000 by the creation of 15,000,000 additional ordinary shares of £1 each to be converted into ordinary stock when issued and fully paid up.

Withdrawal of Passenger Service from Lea Station.—The Eastern Region announces that from August 6 the passenger train service will be withdrawn from Lea Station. Passengers will be catered for at Gainsborough Lea Road, Gainsborough Central, and Stow Park stations, and by the bus services in the area. A C. & D. service for parcels will be provided thrice weekly as hitherto, and parcels may continue to be addressed to Lea Station "to be called for" or handed in there for despatch.

L.M.R. Goods Depots Closing.—The London Midland Region of British Railways announces that the goods depots at four stations are to be closed on and from August 5. The depots are at the following stations: Haughton, between Shrewsbury and Stafford; Trefnant, between Denbigh and Rhyl; White Bear, between Wigan and Blackburn; and Coxbench, between Little Eaton and Ripley. Alternative arrangements will be made for merchandise and minerals traffic. Coal class traffic will be sent to destinations requested by traders.

Bognor Regis Station Clock.—The Southern Region of British Railways states that the work of repairing the station clock at Bognor Regis, referred to in our "Scrap Heap" columns last week, is now in hand. The clock started to keep bad time last November and was officially reported as "stopped" on May 20. In considering immediate repairs, the question of providing special scaffolding was taken into account, but because of the high cost it was decided to hold the work over until renovation of the station buildings, commenced recently.

Higher Fares on German Railways.—German Federal Railway fares and freight charges are to be raised as soon as possible. At a press conference at Frankfurt on July 19 it was stated that the railways had lost £43 million in 1956, even though receipts had risen to some £508 million. The proposed increases would raise second class passenger fares from 6·9 pfennigs to 7·5 pfennigs a kilometre, or about 2½d. a mile, and first class fares to about 3½d. a mile. Certain season tickets would also be more expensive. These changes would increase revenue from passenger fares by about £21,660,000 and higher freight charges should produce some £41 million extra.

Taylor Tools & Supplies Selling Agents.—The appointment has been announced of sole selling agents to handle the range of grinding and polishing machines manufactured by Taylor Tools & Supplies Limited, Broadheath, Altrincham, Cheshire. The agents are:—Midlands: H. Sumner Limited, 45-47, Stour Street, Birmingham, 18; Edgbaston 4541. Lancashire, Cheshire and North Wales: Mr. G. Clarke, 64, Beverley Road, Manchester, 14; Rusholme 8212. London and Home Counties: Power Tools & Accessories Limited, 37, Sheen Road, Richmond, Surrey; Richmond 3425.

Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

Railway Stock Market

There has again been considerable uncertainty in stock markets, where the main feature was a further rally in British Funds on the view that the recent heavy fall was unjustified. War Loan 3½ per cent has rallied to £67¾. Sentiment in this section of markets was helped by the growing hope that a higher bank rate will not be proposed to help check the inflation danger. Industrial shares encountered some selling, but the rather lower prices were due in the main to falling off in demand now that sentiment has been affected by the General Electric reduced dividend and by other financial results showing lower profits, because the inflationary rise in costs has affected earnings despite expansion in sales.

There was not a great deal of business passing in foreign rails, and Antofagasta ordinary stock was 35 with the preference stock 44½. United of Havana second income stock held steady at 8½, and San Paulo Railway 3s. units were 3s. 7½d. and Mexican Central "A" bearer debentures 69.

Canadian Pacifics at $74½ were up to their highest level this year, demand for Canadian securities having persisted. White Pass shares were $22, and Peru Transport "B" shares $1¼. Nyasaland Railways shares were 12s. 6d. and the 3½ per cent debentures 60. Midland of Western Australia ordinary stock was 7½, and among Indian stocks, Barsi were 18½.

Elsewhere, Guayaquil & Quito assented bonds were 84½ and Costa Rica ordinary stock 21½, while Dorada ordinary stock has changed hands around 61. Chilean Northern debentures were 41½. Taltal shares kept at 12s. 3d. International of Central America were $35½ and the preferred stock $185.

Shares of locomotive builders and engineers have been steady with Hurst Nelson 36s. at Glasgow. North British Locomotive eased to 18s. 6d. and Birmingham Wagon were 21s. 3d. Beyer Peacock 5s. shares were 10s. 9d. and Wagon Repairs 5s. shares 13s. 5d.xd. with Gloucester Wagon 10s. shares easier at 16s. 6d. and Charles Roberts 5s. shares 12s. 1½d. The cut in the General Electric dividend, which followed the reduced profits arising from increased costs, put the shares bask to 50s. and other shares were affected, Associated Electrical being lower at 61s. and also English Electric at 62s. 6d. Birmingham Small Arms have been steady at 29s. 9d. Babcock & Wilcox at 72s. 6d. were firm on the latest news of the company's atomic interests, though Cammell Laird 5s. shares eased to 10s. 9d. Hawker, however, rose to 44s. and John Brown were steady at 34s. 9d. the latter awaiting the financial results.

In other directions, T. W. Ward held firm at 82s. 6d. because of higher dividend hopes, and elsewhere George Cohen 5s. shares at 13s. 9d. remained under the influence of the results. Elliott Bros., shares came back to 31s. 3d. awaiting full terms of the proposed take-over of Associated Automation by the formation of a holding company into which shareholders will be asked to exchange their shares. Combined assets of both companies total £10,000,000. British Oxygen were steady at 36s. 4½d. as were British Timken at 66s. 9d. and also G. & J. Weir at 39s. 6d. Steel shares eased because of the threat of re-nationalisation when Labour again forms the Government. In general, however, the Labour plan for the control of industry had little effect on markets.

OFFICIAL NOTICES

RHODESIA RAILWAYS.

VACANCIES FOR CIVIL ENGINEERS.

VACANCIES exist for fully qualified Civil Engineers for service in the Chief Engineer's Department of the Rhodesia Railways. Preferably single men under the age of 25 years will be considered, but married men not exceeding 30 years of age may apply.

For full particulars of salary, conditions of service, etc., apply: London Agent, 241, Salisbury House, London Wall, London, E.C.2.

DIESEL MAINTENANCE ENGINEER required for large Indian Steelworks, capable of maintaining and completely overhauling internal combustion engines, particularly diesel engines up to 660 h.p. of Diesel Electric and Diesel Hydraulic Locomotives. Salary: Rs. 2,200 per month free of income tax with a service contract for 2½ years. This is conditional upon the candidate not having been in India 4 years prior to 1.4.57. No other bonus or allowances will be paid.—For further particulars apply to Box No. 1022, c/o Charles Barker & Sons Ltd., Gateway House, London, E.C.4.

30 TONS Serviceable ex 95 lb. B.H. RAILS in 60 ft lengths and now weighing about 86 lbs. per yard for sale at £26 per ton free on rail Bletchley.—HENRY BOOT & SONS LTD., Banner Cross Hall, Sheffield 11.

RELAYABLE RAILWAY MATERIAL for disposal subject to remaining unsold:—

250 tons 95 lb. B.H. RAIL
150 ,, 85 lb. B.H. RAIL
800 ,, 60 lb. F.B. RAIL
140 ,, 50 lb. F.B. RAIL
50 ,, 35 lb. F.B. RAIL

Turnouts, crossings and fittings, etc., to suit the above material.

2,500 Relayable S.1 Type CHAIRED SLEEPERS
1,000 Relayable PLAIN SLEEPERS. CROSSING TIMBERS
2,500 ROADWAY SLEEPERS.

Apply Eagre Construction Co. Ltd., East Common Lane, Scunthorpe. 'Phone 4513/7.

THE COMMISSIONERS FOR THE PORT OF CALCUTTA.

TENDERS are invited from manufacturers for the supply of six broad gauge diesel hydraulic shunting type locomotives with spares.

Tender forms and Specifications may be obtained from Messrs. Rendel, Palmer & Tritton, Consulting Engineers and London Agents to the Commissioners, upon payment of £1 10s. 0d., and at the office of the Chief Mechanical Engineer to the Commissioners for the Port of Calcutta, 8, Garden Reach Road, Kidderpore, Calcutta-23, India, on production of a receipt for Rs. 20/- from the Commissioners' Treasurer at 15, Strand Road, Calcutta. This amount is not refundable under any circumstances.

Tenders should be submitted in duplicate in sealed covers superscribed "Diesel Locomotives—Five Year Plan" and addressed to Messrs. Rendel, Palmer & Tritton, 125, Victoria Street, Westminster, London, S.W.1, so as to reach them not later than 2 p.m. on Tuesday, the 24th September, 1957. These Tenders will be opened publicly at 2.30 p.m. on the same day at the above premises in the presence of those Tenderers who may wish to attend.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33, Tothill Street, London, S.W.1.